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

July 25, 2016

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

SUBJECT: MILLSTONE POWER STATION – INTEGRATED INSPECTION REPORT 05000336/2016002 AND 05000423/2016002

Dear Mr. Heacock:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Millstone Power Station (Millstone), Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on July 25, 2016, with Mr. John Daugherty, Site Vice President, and other members of your staff.

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

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

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

Sincerely,

/RA/

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

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

Enclosure:
Inspection Report 05000336/2016002 and 05000423/2016002
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.	50-336 and 50-423
License Nos.	DPR-65 and NPF-49
Report Nos.	05000336/2016002 and 05000423/2016002
Licensee:	Dominion Nuclear Connecticut, Inc. (Dominion)
Facility:	Millstone Power Station, Units 2 and 3
Location:	P.O. Box 128 Waterford, CT 06385
Dates:	April 1 through June 30, 2016
Inspectors:	J. Ambrosini, Sr. Resident Inspector, Division of Reactor Projects (DRP) C. Newport, Sr. Resident Inspector (Acting), DRP L. McKown, Resident Inspector, DRP C. Highley, Resident Inspector, DRP K. Reid, Reactor Engineer, DRP H. Anagnostopoulos, Health Physicist, Division of Reactor Safety (DRS) P. Kaufman, Senior Reactor Inspector, DRS P. Presby, Senior Operations Examiner, DRS
Approved By:	Glenn T. Dentel, Chief Reactor Projects Branch 2 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY

Inspection Report 05000336/2016002 and 05000423/2016002; 04/01/2016 – 06/30/2016; Millstone Power Station (Millstone), Units 2 and 3; Operability Determinations and Functionality Assessments.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The inspectors identified one non-cited violation (NCV), which was of very low safety significance (Green). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Barrier Integrity

- Green. The inspectors documented a self-revealing Green NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Dominion did not develop a Unit 3 supplementary leak collection and release system (SLCRS) damper procedure that was adequate to prevent the inoperability of the system. Specifically, deficiencies in procedure SP 3614I.3A, "Supplementary Leak Collection and Release System Boundary Isolation Damper Test," as well as the SLCRS damper monitoring program and preventative maintenance strategy, led to both trains of the Unit 3 SLCRS failing their respective surveillance tests resulting in the inoperability of secondary containment. After the issue was identified, Dominion entered the condition into their corrective action program (CAP) as condition report (CR)1033408, declared the secondary containment inoperable until the plant entered a mode of technical specifications non-applicability, and conducted walkdowns and repairs to the system to restore it to compliance.

  This performance deficiency was considered to be more than minor because it adversely affected the system, structure, and component (SSC) and barrier performance attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, inadequate maintenance of the SLCRS system led to a system differential pressure during operation that was not adequate to meet its design basis surveillance requirement and thus rendered the system inoperable. Additionally, the performance deficiency was similar to IMC 0612, Appendix E, minor example 2.a. The finding was evaluated in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," and determined to be of very low safety significance (Green) since it only represented a degradation of the radiological barrier function provided for the auxiliary building. The finding is related to the cross-cutting aspect of Human Performance, Design Margins, because Dominion did not operate and maintain equipment within design margins. Specifically, Dominion did not appropriately monitor and maintain the SLCRS system in such a way that declining damper performance trends were identified and prevented prior to the inoperability of the system. [H.6] (Section 1R15)

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at 100 percent power and remained at or near there for the duration of the inspection period.

Unit 3 began the inspection period at 100 percent power. On April 9, Unit 3 began refueling outage 3R17 which concluded on May 13. On May 15, during power ascension, operators declared a Notice of Unusual Event (NOUE) due to a main generator hydrogen gas leak into the turbine building. Unit 3 operators manually tripped the reactor in accordance with procedures. On May 17, during power ascension following restoration from the NOUE, the main turbine tripped due to high water level in the moisture separators. Because power level at the time of the turbine trip was less than 51 percent, the reactor remained online. Dominion completed the necessary repairs and resumed power ascension. Unit 3 returned to 100 percent power on May 20. On June 12, operators identified a reactor coolant system (RCS) leak greater than allowed by technical specifications (TSs) coming from the 'A' reactor coolant pump (RCP) seal and performed a rapid downpower to take the unit offline. During the downpower, Unit 3 experienced feedwater system oscillations and operators manually tripped the reactor due to high steam generator water levels. Unit 3 returned to 100 percent power on June 25 and remained there for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 External Flooding

a. Inspection Scope

On June 23, the inspectors performed an inspection of the external flood protection measures for Millstone Unit 2. The inspectors reviewed TSs, procedures, design documents, and Updated Final Safety Analysis Report (UFSAR), Chapter 2.5.4, 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 to observe the condition of the flood gates and water flood doors. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to confirm that, overall, Dominion had established adequate measures to protect against external flooding events and, more specifically, that credited operator actions were adequate. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

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

a. Inspection Scope

On June 23, the inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed Dominion's procedures affecting these areas and the communications protocols between the transmission system operator and Dominion. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether Dominion established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system manager, reviewing CRs and open work orders, and walking down portions of the offsite and AC power systems including the 500 kilovolt (kV) and 220 kV switchyards.

b. Findings

No findings were identified

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- Reactor building closed loop cooling water pump and heat exchanger trains following attempt to isolate 'C' reactor building closed loop cooling water pump on April 15
- 'A' low pressure safety injection during 'B' train surveillance testing on April 28
- Emergency buses 24C, 24D, and 24E on May 16

Unit 3

- 'B' train reactor plant closed cooling water following return to service on May 9

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TSs, work orders, CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were

no deficiencies. The inspectors also reviewed whether Dominion staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On April 20, the inspectors performed a complete system walkdown of systems pertaining to cold leg and hot leg recirculation operations to verify the existing equipment lineup would allow for successful implementation of Dominion's emergency operating procedures. The inspectors reviewed emergency operating procedures, drawings, and the UFSAR to verify that the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify as-built system configuration matched plant documentation. The inspectors confirmed that systems and components were aligned correctly, environmentally qualified and protected against external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs to ensure Dominion appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 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 out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

Unit 2

- Intake structure (I-1A, I-1B, I-1C) on May 25

Unit 3

- Containment 3', -24' (RC-1) on April 12
- Containment 51', 24' (RC-1) on April 12
- Control building east and west switchgear (CB-1, CB-2) on May 10
- Engineered safety features building north and south air conditioning cubicles (ESF-10, ESF-11) on May 19

b. Findings

No findings were identified.

1R07 Heat Sink Performance (711111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the Unit 2 'B' emergency diesel generator (EDG) heat exchangers on May 18 to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified Dominion's commitments to NRC Generic Letter 89-13, "Service Water System Requirements Affecting Safety-Related Equipment." The inspectors discussed the results of the most recent inspection with engineering staff and verified that Dominion initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

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

Unit 3

a. Inspection Scope

From April 18 – 27, 2016, the inspectors conducted an inspection of the Dominion's third period, third interval in-service inspection activities during the Millstone Unit 3 refueling outage (3R17). Inspection samples were chosen based on the procedure objectives and where degradation would result in a significant increase in the risk of core damage. The inspectors observed in-process non-destructive examinations (NDEs), reviewed documentation, and interviewed Dominion personnel to verify that the NDE activities were conducted in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, 2004 Edition, no addenda.

Non-Destructive Examination and Welding Activities (IMC Section 02.01)

The inspectors performed direct observations of NDE activities in process and reviewed records of NDEs listed below:

ASME Code Required Examinations

- Remote observation of a sample of automated phased array ultrasonic test (UT), volumetric examinations, of four 29-inch diameter RCS hot leg reactor vessel outlet nozzle to safe-end dissimilar metal welds (302-121-A, 302-121-B, 302-121-C, 302-121-D), four 27.5 inch diameter RCS cold leg reactor vessel inlet safe-end to nozzle dissimilar metal welds (301-121-A, 301-121-B, 301-121-C, and 301-121-D), and documentation review of all UT examination data records;
- A sample of remote visual (VT-3) observation of reactor internals including the baffle plates, top former plate, and bolting;
- Direct observation of UT examination, RCS hot leg bypass line weld (component ID RCS-504B-FW-4);
- Record review of UT examination reports, auxiliary and main feedwater pipe welds (component ID FWS-25-5-SW-D, FWS-25-5-SW-E and FWA-509-6-SW-2);
- Record review of UT, magnetic particle test, and radiographic film examination of feedwater piping replacement due to flow accelerated corrosion (component ID FWS-11-FW-88, FWS-11-FW-87, FWS-11-FW-93, FWS-11-FW-5-BM, FWS-11-FW-5-CM and FWS-11-FW-8);
- Record review of radiographic film of main feedwater 18 inch diameter 3321A pipe to 20-inch reducer weld (3-FWS-018-83-2 / 3321A);
- Direct observation of UT examination of the safety injection line welds (component ID SIL-25-FW-1-6M and SIL-25-FW-1-7M);
- Record review of UT examination of pressurizer surge nozzle inner radius, weld overlays, surge nozzle to lower head weld, and pressurizer relief nozzle weld overlay (component ID 03-007-SW-S(IR), 03-X-5551-X-T, RCS-SL-FW-4 and 03-007-SW-S) and pressurizer relief nozzle weld overlay (component ID 03-X5650-D-T);
- Direct observation of UT examination of the ‘D’ steam generator main and auxiliary feedwater system welds (component ID FWS-25-5-SW-E, FWS-25-5-SW-D and FWA-509-6-SW-2); and,
- Record review of UT examination of pressurizer relief line, pipe to safe end weld overlay (component ID RCS-513-FW-1).

The inspectors reviewed certifications of the NDE technicians performing the examinations to verify the examinations were performed by qualified individuals in accordance with approved procedures and the results reviewed and evaluated by certified Level III NDE personnel.

Other Augmented or Industry Initiative Examinations

The inspectors reviewed inspections conducted to implement an industry initiative in accordance with the MRP-146, “Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines,” to verify the examinations were conducted in conformance with the guidelines. The inspectors reviewed UT examination data records of ‘A’ and ‘B’ loop reactor coolant drain lines in the crossover leg piping

sections 408002-FW-8 and 408001-Elbow to verify that the activities were performed in accordance with applicable examination procedures and industry guidance.

Review of Originally Rejectable Indications Accepted by Evaluation

The inspectors reviewed surface examinations (M3-PT-14-025 pipe to elbow and M3-PT-14-022 pipe to tee) reports from the previous outage with relevant indications that were evaluated and accepted by Dominion for continued service. The inspectors verified that Dominion's acceptance criteria was in accordance with the ASME Section XI Code, 2004 Edition requirements and confirmed the indications were examined for acceptability for continued service.

Modification/Repair/Replacements Consisting of Welding on Pressure Boundary Risk Significant Systems

Millstone Unit 3 repair/replacement activity associated with the repair of a pipe replacement due to flow accelerated corrosion (3FWS-3321A). The inspectors reviewed the ASME Section XI Repair/Replacement Program procedure, work order 53102838022, welding procedure, weld data record, welding program weld map, welding technique sheet for welding technique 109, UT examination report, and radiographic inspection reports. The inspectors reviewed the repair activity to verify the welding and applicable NDE activities were performed in accordance with ASME Section XI Code, 2004 Edition requirements.

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

The inspectors reviewed the bare metal visual examination data record of the bare metal visual examination completed of the exterior surface of the reactor vessel upper head to verify that no boric acid leakage or wastage was present, noting that there was not a requirement to perform a volumetric NDE of the control rod drive mechanism welds to the reactor pressure vessel head during 3R17.

The inspectors reviewed the bare metal visual examination data records of the reactor vessel lower head in-core instrument nozzle penetration welds. The inspectors assessed the acceptability of the as-found conditions to ensure the integrity of the reactor coolant pressure boundary.

Boric Acid Corrosion Control Inspection Activities

The inspectors discussed the boric acid control program with the boric acid corrosion control program owner. The inspectors also sampled photographic inspections of boric acid found on safety significant piping and components inside containment during the Mode 3 walkdowns conducted by Dominion personnel on April 10, 2016. Selected walkdowns were directly observed by the resident inspectors to verify that the visual inspections were performed in accordance with the Millstone Boric Acid Corrosion Control Program inspection procedure and checklists. The boric acid corrosion control inspection program emphasized the areas and locations where boric acid leaks could cause degradation of safety significant components and required that deficient conditions were identified and documented in the CAP.

A sample of engineering evaluations/corrective actions associated with the boric acid deficiencies were reviewed by the inspectors and verified that CRs were assigned corrective actions consistent with the requirements of the ASME Code and 10 CFR 50, Appendix B, Criterion XVI.

Steam Generator Tube Inspection Activities (IMC Section 02.04)

The inspectors reviewed the Millstone Unit 3 steam generator (SG) eddy current testing (ECT) tube examinations and the applicable procedures for monitoring degradation of the SG tubes. The inspectors verified that the SG examination activities were performed in accordance with the rules and regulations of the Dominion Steam Generator Program; Unit 3 Eddy Current Data Analysis Reference Manual, U3-24-SIP-REF01; NRC generic letters; 10 CFR 50; TSs for Millstone Unit 3; Nuclear Energy Institute 97-06, "Steam Generator Program Guidelines"; Electric Power Research Institute Pressurized-Water Reactor Steam Generator Examination Guidelines; and the ASME Boiler and Pressure Vessel Code, Sections V and XI. The inspectors reviewed the Millstone Unit 3 SG inspection plan, Millstone Unit 3 Steam Generator Integrity Degradation Assessment, and Millstone Unit 3 Steam Generator Condition Monitoring and Operational Assessment for refueling outage 3R17. The SG inspection plan included ECT of all in-service tubes in SG 'B' and 'D' during this outage.

The inspectors observed a sample of ECT of the tubes in the 'B' and 'D' SGs, reviewed ECT data of various tubes, and observed data analysis and resolution activities. During the previous operating cycle no tube leakage was reported and during inspections this outage no tubes required in-situ pressure testing or plugging.

The inspectors verified that the examinations satisfied the Millstone Unit 3 TSs and the Electric Power Research Institute Pressurized-Water Reactor Steam Generator Examination Guidelines by directly observing in-process SG tube examination activity and discussing the eddy current data and results with the Dominion technical specialist responsible for the SG examinations.

Identification and Resolution of Problems (IMC Section 02.05)

The inspectors reviewed a sample of Millstone Unit 3 CRs, which identified flaws and other nonconforming conditions since the previous outage and during the current outage. The inspectors verified that nonconforming conditions were properly identified, characterized, evaluated, corrective actions were identified, and appropriately entered and dispositioned in the CAP.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 6 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (3 samples)

a. Inspection Scope

The inspectors observed the following Unit 2 and Unit 3 licensed operator simulator training scenarios:

Unit 2

- June 3 feed regulating valve packing steam leak, a fire in the west 480 volts alternating current switchgear room, and a loss of plant process computer

Unit 3

- June 7 isolable RCS leak and a station blackout
- June 19 intervention training given to remediate gaps in operator control of the feedwater system identified during the June 12 reactor trip following the 'A' RCP seal failure

The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classifications made by the shift manager and the TS action statements entered by the unit supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (3 samples)

a. Inspection Scope

Unit 2

The inspectors observed Unit 2 operator performance during control element assembly partial movement testing on May 24 as well as a planned downpower and quarterly turbine valve testing on May 26. The inspectors observed crew briefings and focus briefings to verify that the briefings met the criteria specified in Dominion's Operations Section Expectations Handbook. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

Unit 3

The inspectors observed Unit 3 operator performance during the transition to shutdown cooling during 3R17 on April 10 and the reactor startup following an unplanned reactor trip on May 16. The inspectors observed crew briefings and focus briefings to verify that the briefings met the criteria specified in Dominion's Operations Section Expectations Handbook. Additionally, the inspectors observed performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on 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

- Charging pump piston seal leakage on May 5

Unit 3

- Pressurizer relief valves flow alarm on February 10

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Dominion performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety

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

Unit 2

- Electro-hydraulic control system troubleshooting following failure of the 'R' control card on April 1
- 'A' EDG heat exchanger maintenance window on June 1
- High risk contingency plan actions for packing adjustment on 2-FW-51B on June 29

Unit 3

- Decreased RCS inventory on April 13
- 34D 4160V bus outage on April 20
- Decreased RCS inventory on May 3
- Yellow risk due to decay heat removal during forced outage on June 16

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 samples)

a. Inspection Scope

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

Unit 2

- Motor control center vital area cooler electrical environmental qualification non-conformance on April 1
- Reserve station service transformer to north bus disconnect switch 15G-22S1-4 position detection error on April 20

Unit 3

- CR1033408, SLCRS negative pressure surveillance failed to meet acceptance criteria on April 9
- Crosby service water relief valve ASME III non-conformance on April 12
- Pressurizer safety valve tailpipe temperature differences on May 15

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

b. Findings

Introduction. The inspectors documented a self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Dominion did not develop a Unit 3 SLCRS damper preventative maintenance procedure that was adequate to prevent the inoperability of the system. Specifically, deficiencies in procedure SP 3614I.3A, "Supplementary Leak Collection and Release System Boundary Isolation Damper Test," as well as the SLCRS damper monitoring program and preventative maintenance strategy, led to both trains of the Unit 3 SLCRS failing their respective surveillance tests resulting in the inoperability of secondary containment.

Description. The Unit 3 SLCRS is a safety-related system that mitigates the radiological consequences of postulated accidents by filtering the exhaust from the secondary containment, an area that includes the containment enclosure building, engineered safety features building, auxiliary building, main steam valve building, and hydrogen recombiner building. The SLCRS consists of two redundant trains of exhaust fans, dampers, and their associated filter units. The safety function of the SLRCS is to maintain a negative pressure in the secondary containment to ensure there is no unfiltered leakage to the outside environment from these areas in the event of an accident. The SLCRS is not normally in operation, and starts upon receipt of a signal from the reactor protection system. The TS operability of the system is verified, in part, by a negative pressure surveillance test performed every refueling outage on both trains. The surveillance verifies that the system can maintain a minimum vacuum pressure for a specified period of time (-0.40 inches water gauge or better for 120 seconds).

On April 9, 2016, Dominion conducted the Unit 3 TS required 18-month surveillance procedure 3614I.3, "SLCRS Negative Pressure Verification," and determined that the 'B' train of SLCRS did not meet the surveillance criteria acceptance criteria of -0.40 inches of water gauge negative vacuum pressure for 120 seconds. Dominion subsequently conducted the same surveillance on the 'A' train of SLCRS and determined that it too did not meet the surveillance procedure acceptance criteria. As a result of both trains of SLCRS failing their TS required surveillance criteria, Dominion declared the Unit 3 secondary containment inoperable and entered the applicable TS action statement - 3.6.6.2, "Secondary Containment." This action statement requires secondary containment to be restored to an operable status within 24 hours or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours. During the time of the conduct of the surveillance procedures, Millstone Unit 3 was in the process of conducting a plant shutdown for refueling outage 3R17 and entered Mode 5 (cold shutdown) prior to the required TS action time expiration.

A subsequent root cause evaluation conducted by Dominion (CR1033408) determined that the cause of both trains of SLCRS to not meeting their respective surveillance requirements was the failure to develop a Unit 3 SLCRS damper preventative maintenance procedure that was adequate to prevent the inoperability of the system. Specifically, deficiencies in procedure SP 3614I.3A, "Supplementary Leak Collection and Release System Boundary Isolation Damper Test," led to Dominion personnel using SLCRS damper position indicator lights, rather than a visual observation of actual damper position, to determine the condition of the associated dampers. This directly led to the degradation of dampers such that a leakage bypass flowpath was established that degraded the ability of the system to maintain its required vacuum pressure. Additionally, the SLCRS damper monitoring program and preventative maintenance strategies were cited as contributing causes to the degradation of the systems. Specifically, there was no engineering program in place to monitor for damper performance and direct the performance of a specific maintenance strategy despite a history of damper performance issues that included twelve instances of auxiliary building damper degradation and three instances of main steam valve building damper degradation.

After discovery of the system degradation, Dominion personnel conducted extensive walkdowns and analysis to determine the cause of the degradation. Repairs were conducted on all components of the system where degradation was observed. Surveillance procedure SP 3614I.3 was conducted again on both trains of SLCRS prior to the plant reaching a TS required mode of applicability. Both trains of SLCRS meet the acceptance criteria with a significant margin.

Analysis. The inspectors determined that failing to conduct adequate maintenance on the SLCRS system was a performance deficiency within Dominion's ability to foresee and correct. This performance deficiency was considered to be more than minor because it adversely affected the SSC and barrier performance attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, inadequate maintenance of the SLCRS system led to a system differential pressure during operation that was not adequate to meet its design basis surveillance requirement and thus rendered the system inoperable. Additionally, the performance deficiency was similar to IMC 0612, Appendix E. minor example 2.a. The finding was evaluated in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," and determined to be of very low safety significance (Green) since it only represented a degradation of the radiological barrier function provided for the auxiliary building. The finding is related to the cross-cutting aspect of Human Performance, Design Margins, because Dominion did not operate and maintain equipment within design margins. Specifically, Dominion did not appropriately monitor and maintain the SLCRS system in such a way that declining damper performance trends were identified and prevented prior to the inoperability of the system. [H.6]

Enforcement. 10 CFR 50, Appendix B, Criterion V states, in part, "Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to the above, from September 12, 2012, to present, Dominion procedure SP 3614I.3A has not included appropriate quantitative or qualitative acceptance criteria for determining that positioning of the SLCRS dampers has been satisfactorily

accomplished. After the issue was identified, Dominion entered the condition into their CAP (CR1033408), declared the secondary containment inoperable until the plant entered a mode of tech Spec non-applicability, and conducted walkdowns and repairs to the system to restore it to compliance. Because this issue is of very low safety significance (Green) and Dominion has entered this issue into their CAP, this finding is being treated as an NCV consistent with the NRC Enforcement Policy Section 2.3.2.a. **(NCV-05000423/2016002-01: Secondary Containment Inoperability Due to Inadequate Procedures)**

1R18 Plant Modifications (71111.18 – 4 samples)

.1 Temporary Modifications

a. Inspection Scope

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

- Unit 3 reactor vessel level monitoring system sensor A2 jumpers on May 16

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors evaluated the following permanent modifications to verify 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 design changes, observed installation activities where possible, and reviewed revisions to control room alarm response procedures as necessary.

- Unit 3 RCP seal replacement (‘B’ and ‘C’) on April 20
- Unit 3 service water piping replacement for a throughwall leak on inlet header to ‘D’ recirculation spray system (RSS) heat exchanger on April 25
- Unit 3 turbine driven auxiliary feedwater pump refueling outage 3R17 permanent modifications, May 19

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 8 samples)

a. Inspection Scope

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

Unit 2

- 'C' charging pump overhaul on May 24
- Packing adjustment on 2-FW-51B feedwater regulating valve on June 30

Unit 3

- 'B' EDG governor replacement on April 25
- Service water piping throughwall leak on inlet header to 'D' RSS heat exchanger on April 25
- SLCRS negative pressure verification following surveillance test failure on May 8
- 'B' feedwater regulating valve positioner replacement on May 31
- Steam flow instrument (FI-512) not indicating at low powers due to installation of new isolation valve in a different orientation than the previous valve on May 13
- 'A' EDG two year preventative maintenance window on June 10

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 2 samples)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 3 maintenance and refueling outage (3R17), which was conducted April 10 through May 13 and the Unit 3 forced outage from June 12 through June 25. The inspectors reviewed Dominion's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TSs when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting, particularly during activities associated with the highest level of shutdown risk, which occurred during the RCS drain-down for reactor vessel head de-tensioning and lift activities, as well as the drain-down to reinstall and tension the reactor vessel head
- Status and configuration of electrical systems and switchyard activities to ensure that TSs were met
- Monitoring of decay heat removal operations during initial transition to shutdown cooling, as well as activities associated with spent fuel pool cooling following full core off-load
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Maintenance of secondary containment as required by TSs
- Refueling activities, including fuel handling and fuel receipt inspections
- Fatigue management that involved covered workers and review of work hour controls
- Final containment closeout walkdown to verify that debris or equipment had not been left inside, particularly in areas that could impact operability of the containment recirculation sumps
- Reactor start-up, plant heat-up, and power ascension activities; and
- Identification and resolution of problems related to refueling outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 8 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 TSs, the UFSAR, and Dominion procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

Unit 2

- SP 2604D-002, 'B' low pressure safety injection pump and valve test on April 28
- SP 2620A, control element assembly partial movement test on May 24
- SP 2651N, main turbine control valve operability test on May 26
- SP 2601H, 'C' charging pump comprehensive test on May 27 (IST)

Unit 3

- Train 'B' emergency safeguards feature with loss of power test on April 29
- 'A' RCP seal supply isolation 3CHS*MV8109A local leak rate test on May 10 (containment isolation valve)
- RCS leakage on May 24
- Power operated relief valve block valve cycling on June 10

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

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

a. Inspection Scope

The inspectors reviewed Dominion's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, TSs, applicable regulatory guides (RGs), and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed radiation protection program audits and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazard Assessment

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

Instructions to Workers (1 sample)

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

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

Radiological Hazards Control and Work Coverage (1 sample)

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walkdowns and observation of radiological work activities. The inspectors assessed whether posted surveys, radiation work permits, worker radiological briefings and radiation protection job coverage, continuous air monitoring use, air sampling and engineering controls, and dosimetry monitoring were consistent with the present plant conditions. The inspectors examined the control of highly activated or contaminated materials stored within the spent fuel pools and the posting and physical controls for selected high radiation areas, locked high radiation areas, and very high radiation areas to verify conformance with the occupational performance indicator.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 sample)

The inspectors evaluated radiation worker performance with respect to radiation protection work requirements. The inspectors evaluated radiation protection technicians in performance of radiation surveys and in providing radiological job coverage.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02 – 1 sample)

a. Inspection Scope

The inspectors assessed Dominion's performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements contained in 10 CFR 20, applicable RGs, TSs, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors conducted a review of Millstone's ongoing and planned radiological work activities and radiological source term history and trends.

Source Term Reduction and Control

The inspectors observed radiological work activities and evaluated the use of shielding and other engineering work controls based on the radiological controls and ALARA plans for those activities.

Radiation Worker Performance (1 sample)

The inspectors observed radiation worker and radiation protection technician performance during radiological work to evaluate worker ALARA performance according to specified work controls and procedures. Workers were interviewed to assess their knowledge and awareness of planned and/or implemented radiological and ALARA work controls.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 4 samples)

a. Inspection Scope

The inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR 20, RG 8.15, RG 8.25, NUREG/CR-0041, TS, and procedures required by TS as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the UFSAR to identify ventilation and radiation monitoring systems associated with airborne radioactivity controls and respiratory protection equipment staged for emergency use. The inspectors also reviewed respiratory protection program procedures and current performance indicators for unintended internal exposure incidents.

Engineering Controls (1 sample)

The inspectors reviewed operability and use of both permanent and temporary ventilation systems, and the adequacy of airborne radioactivity radiation monitoring in the plant based on location, sensitivity, and alarm set-points.

Use of Respiratory Protection Devices (1 sample)

The inspectors reviewed the adequacy of Dominion's use of respiratory protection devices in the plant to include applicable ALARA evaluations, respiratory protection device certification, respiratory equipment storage, air quality testing records, and individual qualification records.

Self-Contained Breathing Apparatus (SCBA) for Emergency Use (1 sample)

The inspectors reviewed the following: the status and surveillance records for three SCBAs staged in-plant for use during emergencies; Dominion's SCBA procedures and maintenance and test records; the refilling and transporting of SCBA air bottles; SCBA mask size availability; and the qualifications of personnel performing service and repair of this equipment.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were identified at an appropriate threshold and addressed by Dominion's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications (6 samples)

a. Inspection Scope

The inspectors reviewed Dominion's submittals for the following Initiating Events Cornerstone performance indicators for the period of April 1, 2015, through March 31, 2016:

Unit 2

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

Unit 3

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

To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed Dominion's operator narrative logs, maintenance planning schedules, CRs, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 1 sample)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Annual Sample: Performance Issues with Units 2 and 3 Control Room Simulators

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's evaluations and corrective actions associated with degraded simulator performance during the first half of calendar year 2015. An in-depth review was performed of Common Cause Analysis CR582505 / CCA000338 and Apparent Cause Analysis CR1005914, assessing Dominion's evaluation and corrective actions to determine whether the corrective actions were appropriate. Additionally, the inspectors reviewed two completed Unit 2 simulator deficiency report (DR) packages associated with simulator enhancement modifications for modeling of events similar to the shutdown cooling relief valve 2-SI-468 lift event of October 4, 2015.

b. Findings and Observations

No findings were identified.

The inspectors determined Dominion's evaluation appropriately identified the causes and that corrective actions were adequate to resolve the simulator performance issues.

DR 2015-2-0040 was generated to create a new simulator malfunction feature to model a failure of shutdown cooling relief valve 2-SI-468. In addition to creating the new malfunction, code changes were implemented under this DR to have the relief valve more accurately model actual plant valve response. The inspector determined that a variable in the code was incorrectly named, such that the accuracy of valve modeling was not improved by these changes. This undesired result should have been identified and corrected by Dominion's simulator modification validation and verification process. CR1039577 and DR 2016-2-0050 were initiated to correct this condition.

DR 2016-2-0003 was generated to create a new simulator malfunction feature to simulate failure of charging system relief valve 2-CH-986. This variable severity

malfunction was tested by facility staff at a partial severity, simulating the valve failing partially open, prior to testing at its 100 percent severity (valve fully open). The inspector, while observing simulation of the malfunction with one of the facility's simulator software engineers, determined the valve remained full open when malfunction severity was reduced, after first initiating the malfunction at 100 percent severity. This undesired result should have been identified and corrected by Dominion's simulator modification validation and verification process. CR1039577 and DR 2016-2-0049 were initiated to correct this condition.

Both of these issues screened to minor in accordance with IMC 0612, Appendix B, because the issues did not adversely affect any of the cornerstone objectives.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153 – 5 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 3 reactor trip and NOUE on May 15
- Unit 3 turbine trip on May 17
- Unit 3 unplanned downpower for 'A' RCP seal failure and subsequent reactor trip on June 12

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000423/2016-002-00: Feedwater Isolation Signal Defeated Due to Wiring Error

On January 25, 2016, an automatic reactor trip occurred at Millstone Unit 3 due to a loss of the 'B' RCP. While operators were performing feedwater isolation actuation verification steps, it was identified that the 'C' feedwater isolation valve (FWIV), 3FWS*CTV41C, did not auto close as expected. Operators subsequently closed the 'C' FWIV from the control room. The automatic closure of the 'C' FWIV is required by TS 3.3.2 and Table 3.3-3. Its failure to automatically close therefore represents a condition that is prohibited by TSs. The ability to automatically isolate main feedwater was maintained due to redundant valves in series with the 'C' FWIV that operated correctly during the event. The cause of the 'C' FWIV failure to close was determined to be a temporary jumper being inadvertently left installed in November 2014 during

maintenance due to human error. The inspectors identified a self-revealing Green NCV associated with this event that was dispositioned in Inspection Report 05000336/2016001 and 05000423/2001601, Section 1R19 (Agencywide Documents Access and Management System Accession No. ML16125A122). This LER is closed.

.3 (Closed) Licensee Event Report (LER) 05000423/2016-003-00: Loss of Safety Function – Supplementary Leak Collection and Release System

On April 9, 2016, Dominion conducted the Unit 3 TS required 18-month surveillance procedure 364I.3, "SLCRS Negative Pressure Verification," and determined that the 'B' train of SLCRS did not meet the surveillance criteria acceptance criteria of -0.40 inches of water gauge negative vacuum pressure for 120 seconds. Dominion subsequently conducted the same surveillance on the 'A' train of SLCRS and determined that it too did not meet the surveillance procedure acceptance criteria. As a result of both trains of SLCRS failing their TS required surveillance criteria, Dominion declared the Unit 3 secondary containment inoperable and entered the applicable TS action statement - 3.6.6.2, "Secondary Containment." This action statement requires secondary containment to be restored to an operable status within 24 hours or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours. During the time of the conduct of the surveillance procedures, Millstone Unit 3 was in the process of conducting a plant shutdown for refueling outage 3R17 and entered Mode 5 (cold shutdown) prior to the required TS action time expiration. The enforcement aspects of this issue are discussed in Section 1R15. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA6 Meetings, Including Exit

On July 25, 2016, the inspectors presented the inspection results to Mr. John Daugherty, Site Vice President, and other members of the Millstone staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Daugherty, Site Vice President
C. Olsen, Plant Manager
L. Armstrong, Director, Performance Recovery
R. Borchart, Senior Reactor Engineer
B. Bowen, Shift Supervisor, Health Physics
M. Bradley, Supervisor Health Physics Operations
J. Brookmiller, U-3 Outage Coordinator
J. Burkirk, Outage Control Center Health Physics Representative
S. K. Chang, Simulator Support Engineer
T. Cleary, Supervisor, Licensing
G. Closius, Licensing
G. Cochran, Supervisor, Nuclear Site Safety
M. Cote, Supervisor - Nuclear Training
S, Doboe, Unit 2 Shift Manager
D. DelCore, Shift Supervisor, Health Physics
D. Dodson, Manager of Programs
M. Dunivan, Supervisor, Health Physics Auxiliary Building
S. Galbo, Fire Safety Technician
K. Gannon, Supervisor, Health Physics
M. Garza, Refueling Team (OCC)
W. Gorman, RMS Supervisor
B. Graber, Supervisor Exposure Control and Instrumentation
M. Hall, Dominion Corporate Welding Engineer
K. Hacker, Dominion Corporate Level III K. Miles, Shift Supervisor, Health Physics
L. Hahn, Supervisor - IT Business Accounts
C. Karpinski, Senior Nuclear Instructor
L. Lebaron, System Engineer
J. Lebruto, Design Engineering
A. Leone, Shift Manager
D. Mello, Senior Fire Instructor
B. Pinkowitz. Operations Instructor
L. Salyards, Licensing
L. Seplak, Regulatory Assurance
D. Smith, Site Emergency Preparedness Manager
T. Spakowski, Senior Nuclear Training Instructor
P. Sucholet, Manager - IT Process Systems
M. Sweet, Shift Supervisor, Health Physics
M. Stark, Nuclear Technical Specialist, ISI/NDE - Steam Generators
C. Tan, Simulator Support Engineer
J. Taylor, Supervisor, Health Physics Outage Containment
T. Thull, Boric Acid Program Manager
S. Turowski, Manager, Radiation Protection and Chemistry
K. Underwood, Operations Instructor
C. Walsh, Superintendent - Nuclear Operations Training
R. Wesley, Director - Nuclear Training

S. Williams, Lead Nuclear Chemistry Technician
M. Wynn, Supervisor, Radiological Analysis
R. Zieber, Nuclear Technical Specialist, ISI/NDE

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000336/2016002-01	NCV	Secondary Containment Inoperability Due to Inadequate Procedures (Section 1R15)

Closed

05000423/2016-002-00	LER	Feedwater Isolation Signal Defeated Due to Wiring Error (Section 4OA3)
05000423/2016-003-00	LER	Loss of Safety Function – Supplementary Leak Collection and Release System (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
OP 2356, Doors, Revision 004
AOP 2560, Storms, High Winds, High Tides, Revision 016
MP 2701E, Unit 2 Flood Gates Installation and Removal, Revision 000-01
SP 2665, Building Flood Gate Inspections, Revision 005-05
MP-01-SM-GDL01.03, Power Change, Outage Notification, and Communication Protocol, Revision 003
AOP 3569, Severe Weather Conditions, Revision 022
AOP 2508, Loss of 23kV Off-Site Power, Revision 001-06
Millstone Switchyard NEIL Weekly Insurance Inspection, Revision 4
AOP3577, Loss of Normal and Off-Site Power to a 4.16kV Emergency Bus, Revision 3
OP 2508, Loss of 23kV Off-Site Power, Revision 001-06
SP 2619G, Surveillance Form TS 3.8.1.1 action a.-One Off-Site Circuit Inoperable, Revision 002-03
SP 3646A.7-003, Surveillance Form TS 3.8.1.1 action a. – One Off-site Circuit and One EDG Inoperable, Revision 006
SP 3646A.7-001, Surveillance Form TS 3.8.1.1 action a. – One Off-site Circuit Inoperable, Revision 009

Condition Reports

370289	581747	1018031	1009399
1008618	1004750	1002348	582671
1022660			

Work Orders
53102864599
53102527483

Section 1R04: Equipment Alignment

Procedures
EOP 35 ES-1.4, Transfer to Hot Leg Recirculation, Revision 011
EOP 35 FR-C.2, Response to Degraded Core Cooling, Revision 013-01
EOP 35 FR-C.1, Response to Inadequate Core Cooling, Revision 017-01
EOP 35 ECA-3.2, SGTR with Loss of Reactor Coolant – Saturated Recovery Desired, Revision 015
EOP 35 ECA-3.1, SGTR with Loss of Reactor Cooling – Subcooled Recovery Desired, Revision 020
EOP 35 ES-1.3, Transfer to Cold Leg Recirc, Revision 016
EOP 35 ES-1.2, Post LOCA Cooldown and Depressurization, Revision 019
EOP 35 E-1, Loss of Reactor or Secondary Coolant, Revision 026
MA-AA-105, Scaffolding, Revision 16

Drawings
1279-EM-121A, Reactor Plant Component Cooling System, Revision 32
25212-26902, Reactor Coolant System, Revision 32
25212-26912, Low Pressure Safety Injection, Revision 22
25212-26912, Low Pressure Safety Injection, Revision 50
25212-29013, High Pressure Safety Injection, Revision 41
SKM-CMC-SFTINJ, Updated 5-28-02
25203-30001, Main Single Line Diagram, Revision 40
25203-30005, Single Line Meter and Relay Diagram 4.16kV Emergency Buses 24C and 24D, Revision 21
25203-30008, Single Line Diagram 480V Unit Substation Emergency 22E and 22F, Revision 21
25203-26015, Sheet 1, P&ID Low Pressure Safety Injection System, Revision 46
25203-26022, Sheet 1, P&ID RBCCW System, RBCCW Pumps and Heat Exchangers, Revision 45

Condition Reports
576668 576660 704830 1037635
1037768

Maintenance Orders/Work Orders
53M30707306
53102352419
53M20303868

Miscellaneous
Millstone Unit 3 Updated Final Safety Analysis Report

Section 1R05: Fire Protection

Procedures
MP-PROC-ENG-U2-24-FFS-BAP01-INT, MSP2 Fire Fighting Strategies Intake Structure, Revision 0

MP-PROC-ENG-U3-24-FFS-BAP01-RC, MSP3 Fire Fighting Strategies Containment Structure, Revision 0
MP-PROC-ENG-U3-24-FFS-BAP01-RC-MAP, Containment Building Fire Strategy Map, Revision 0
MP-PROC-ENG-U3-24-FFS-BAP01-CB-MAP, Control Building Fire Strategy Map, Revision 0

Miscellaneous
Millstone Unit 3 Updated Final Safety Analysis Report

Section 1R06: Heat Sink Performance

Condition Reports
575328 538282

Work Orders
53102842743 53102725788 53102842745 53102958249 53102842747

Miscellaneous
Calculation 94-DES-1111-M2, MP2 SWS Maximum Allowable Temperature to EDG Heat Exchangers at 1800KW and 2750KW Electrical Load Levels with 5% Tubes Plugged in Each Unit, Revision 00
Calculation Change Notice 1 to Calculation 94-DES-1111-M2, MP2 SWS Maximum Allowable Temperature to EDG Heat Exchangers at 1800KW and 2750KW Electrical Load Levels with 5% Tubes Plugged in Each Unit, Revision 00
Calculation 12-328, Equivalent Thermal Performance of Unit 2 EDG Heat Exchangers for UHS Temperature Increase, Revision 0

Section 1R08: In-service Inspection Activities

Procedures
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M3-UT-16-078, UT Indication Report, D steam generator main feedwater elbow to pipe, component ID FWS-25-5-SW-E, dated April 24, 2016
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Condition Reports

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Procedures

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Work Orders

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Procedures
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Condition Reports

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Procedures
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Condition Reports
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Condition Reports

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Condition Reports

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Work Orders

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Condition Reports

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1033660	1033682	1033700	1033701
1033808	1034487	1035966	1036001
1038685	1037325	1037464	1027716
1027722	1027701		

Work Orders

53102949897	5310297460	5310297350	53102970121
53102546606	53102770335	53102762832	53102464845
53102547041	53102464862	53102464825	53102390268
53102590077	53M30401200	53102464698	53102464814
53102837206	53102851842	53102933088	53102547035
53102465981	53102466404	53102546616	53102933112
53102547052	53102675529	53102675529	53102900329
53102675253	53102836296	53102836306	53M30703497
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53102465716	53M30703498	53102770341	53102770335
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5310265971	5310273793	5310283628	5310254661
5310267551	5310275400	5310254702	53102464989
5310265766	5310265972	5310279650	53102910062
5310267703	5310278431	5310291378	53102586047

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Procedures
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Condition Reports

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1037278			

Work Orders
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53102968741

Miscellaneous
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Procedures
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Condition Reports

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Work Orders

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Procedures

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Condition Reports

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Radiological Survey, Figure 35, 10/29/15 At 0615
Radiological Survey, Figure 35, 10/29/15 At 1710
Radiological Survey, Figure 46A, 4/11/16 At 1200
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RP-AA-161, Qualitative Fit Testing for Industrial Face Masks / Dust Masks / N95 Masks Using 3-M Qualitative Fit Testing Equipment, Revision 0
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Breathing air test result, Trace Analytics, LLC, Bauer UNI II S/N 77541, dated 9/24/2014
Breathing air test result, Trace Analytics, LLC, Bauer UNI II S/N 77541, dated 1/15/2015
Breathing air test result, Trace Analytics, LLC, Bauer UNI II S/N 77541, dated 3/13/2015
Lesson Plan FB-00185 “Self-Contained Breathing Apparatus Scott 4.5 with Duration Extending Accessory Hose
MP-HPO-16020, “3R17 Airflow Study to Verify Previous 3R16 Study”, dated 4/18/2016
Respirator medical, fit test, and training qualification records for various selected workers
Self-Assessment Report, SAR002511, “Respiratory Protection Program”, not dated

Condition Reports

CR1013210	CR1040433	CR1041776	CR440103
CR468120	CR576756	CR571278	CR570982
CR553474	CR551407	CR549963	CR546560
CR538702	CR533365	CR530286	CR528158
CR521328	CR519773	CR505655	CR495918
CR492378	CR491017		

Work Orders

53102390295	53102390586	53102419146	53102448322
53102468558	53102493863	53102520810	53102590692
53102605166	53102652792	53102717311	53102897291
53M30411990	53M30612853	53M30704998	53M30714219
53M30803317			

Miscellaneous
Air Activity Log, Unit-3, 4/19 to 4/20/16
Air Sample Report No. 2694
Air Sample Report No. 2702
Air Sample Report No. 2704
Air Sample Report No. 2727
Air Sample Report No. 2728
Air Sample Report No. 2729
Air Sample Report No. 2730

Air Sample Report No. 2731
Air Sample Report No. 2732
Air Sample Report No. 2733
Air Sample Report No. 2734
Air Sample Report No. 2735
Air Sample Report No. 2736
Personal Internal Dosimeter Record, EID 67615, dated 4/19/16
Personal Internal Dosimeter Record, EID 84103, dated 4/19/16

Section 4OA2: Problem Identification and Resolution

Procedures
OP-2207, Plant Cooldown, Revision 039

Condition Reports

1039577	1039453	1005914	1017078
1011898	582505		

Miscellaneous
PI submittals 2Q2015 – 1Q2016
Nuclear Energy Institute Documents 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7
LER 2015-003, Valid Actuation of the Reactor Protection System

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

Procedures
OP-AA-1500, Operational Configuration Control, Revision 12
OP-AA-200, Equipment Clearance, Revision 23
OP 3203, Plant Start up, Revision 021
OP 3323A, Main Turbine Start up, Revision 015-06
OP 3317, Reheat and Moisture Separator start up, Revision 017
EOP 35 ES-0.1, Reactor Trip Response, Revision 027-00
EOP 35 E-0, Reactor Trip or Safety Injection, Revision 31
MP-26-EPI-FAP06-003, Emergency Action Levels, Revision 003
OP-AP-105-Attachment 4, Post Trip Review Report, Revision June 2015

Condition Reports

1037818	1037586	1038363	1037601
1039762			

Work Orders
53102971347

Miscellaneous
Tagout MSS00-0001, 3HRS-PS35 Reheat steam drains to Low Pressure Turbine pressure switch
Apparent Cause Evaluation 3031934, Turbine tripped from 18% Reactor Power due to MSR high levels

LIST OF ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
AC	alternating current
ALARA	as low as is reasonably achievable
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CR	condition report
DR	deficiency report
ECT	eddy current testing
EDG	emergency diesel generator
FWIV	feedwater isolation valve
IMC	Inspection Manual Chapter
LER	licensee event report
NCV	non-cited violation
NDE	non-destructive examination
NOUE	Notice of Unusual Event
NRC	Nuclear Regulatory Commission, U.S.
RCP	reactor coolant pump
RCS	reactor coolant system
RG	regulatory guide
RSS	recirculation spray system
SCBA	self-contained breathing apparatus
SG	steam generator
SLCRS	supplementary leak collection and release system
SSC	structure, system, or component
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic test