



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

February 1, 2018

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Dominion Energy, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION – INTEGRATED INSPECTION REPORT
05000336/2017004 AND 05000423/2017004

Dear Mr. Stoddard:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Millstone Power Station (Millstone), Units 2 and 3. On January 17, 2018, the NRC inspectors discussed the results of this inspection with Mr. John Daugherty, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

If you contest the violation or significance of this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Millstone. In addition, if you disagree with a cross-cutting aspect assignment, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001; with copies to the Regional Administrator, Region I, and the NRC Resident Inspector at Millstone.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Daniel L. Schroeder, 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 05000336/2017004
and 05000423/2017004 w/Attachment:
Supplementary Information

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05000336/2017004 AND 05000423/2017004 dated February 1, 2018

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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. 05000336/2017004 and 05000423/2017004

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

Facility: Millstone Power Station, Units 2 and 3

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

Dates: October 1 through December 31, 2017

Inspectors: J. Fuller, Senior Resident Inspector
L. McKown, Resident Inspector
C. Highley, Resident Inspector
H. Anagnostopoulos, Senior Health Physicist
E. Burket, Reactor Inspector
J. DeBoer, Emergency Preparedness Inspector
P. Presby, Senior Operations Engineer
J. Brand, Reactor Inspector

Approved By: Daniel L. Schroeder, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY	3
1. REACTOR SAFETY	4
1R01 Adverse Weather Protection	4
1R04 Equipment Alignment	5
1R05 Fire Protection	6
1R06 Flood Protection Measures	7
1R07 Heat Sink Performance	8
1R08 In-service Inspection	8
1R11 Licensed Operator Requalification Program and Licensed Operator Performance ..	11
1R12 Maintenance Effectiveness	14
1R13 Maintenance Risk Assessments and Emergent Work Control	15
1R15 Operability Determinations and Functionality Assessments	16
1R18 Plant Modifications	16
1R19 Post-Maintenance Testing	17
1R20 Refueling and Other Outage Activities	18
1R22 Surveillance Testing	21
1EP4 Emergency Action Level and Emergency Plan Changes	22
2. RADIATION SAFETY	22
2RS1 Radiological Hazard Assessment and Exposure Controls	22
4. OTHER ACTIVITIES	24
4OA1 Performance Indicator Verification	24
4OA2 Problem Identification and Resolution	25
4OA3 Follow-Up of Events and Notices of Enforcement Discretion	32
4OA6 Meetings, Including Exit	33
SUPPLEMENTARY INFORMATION	A-1
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED	A-2
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS	A-21

SUMMARY

IR 05000336/2017004 and 05000423/2017004; 10/01/2017 – 12/31/2017; Millstone Power Station (Millstone), Units 2 and 3; Refueling and Other Outage Activities.

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 October 28, 2016. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Barrier Integrity

- Green. A self-revealed NCV of very low safety significance (Green) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified wherein, on October 13, 2017, Dominion failed to accomplish an activity affecting quality, Plant Cooldown, in accordance with approved procedures. Specifically, during solid plant cooldown, over the course of 18 seconds, reactor coolant system (RCS) pressure increased from 350 psia to 472 psia, which exceeded the limit of 435 psia established by Attachment 1, "RCS Cooldown Curves," of operating procedure OP 3208, "Plant Cooldown," Revision 028. Dominion operations staff took prompt actions to restore RCS pressure within limits and completed a required engineering evaluation to determine the effect of the out of limit condition on the structural integrity of the RCS. Dominion entered this issue into the corrective action program (CAP) as condition report (CR) 1080842 and completed a root cause evaluation of the event.

This finding was determined to be more than minor because it adversely affected the configuration control attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers (RCS) protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," and determined the finding to be of very low safety significance (Green). The finding had a cross-cutting aspect in the area of Human Performance related to Work Management because the licensee did not implement an adequate process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. Specifically, Dominion failed to recognize the increased risk of isolating instrument air during solid plant operations. [H.5] (Section 1R20)

REPORT DETAILS

Summary of Plant Status

Unit 2 operated at or near 100 percent power for the entire operating period.

Unit 3 began the inspection period at 100 percent power and operated at full power until October 12, when operators reduced power and shutdown the reactor to start the 3R18 refueling outage. Unit 3 returned to 100 percent power on November 17, after the completion of the 3R18 refueling outage, and operated at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Readiness for Seasonal Extreme Weather Conditions (71111.01 – 2 samples)

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 External Flooding (71111.01 – 1 sample)

a. Inspection Scope

During the week of October 29, the inspectors performed an inspection of the external flood protection measures for Millstone. The inspectors reviewed TSs, procedures, design documents, and the UFSAR, which depicted the design flood levels and protection areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a general site walkdown of all external areas of the plant, including the emergency diesel generator (EDG) enclosures, turbine building, auxiliary building, and berm to ensure that Dominion erected flood

protection measures in accordance with design specifications. Where applicable, the inspectors determined installed flood seal service life and verified that adequate procedures existed for inspecting the installed seals.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 5 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- 'B' high pressure safety injection (HPSI) train during inoperability of 'A' HPSI train, 'D' RCS loop injection valve on October 5
- 'B' EDG fuel Injection during Unit 3 reserve station service transformer (RSST) outage on October 25
- Emergency core cooling system (ECCS)/low pressure safety injection (LPSI) line following discovery of gas voiding on October 31

Unit 3

- Reactor plant closed cooling water to residual heat removal during reactor draindown on October 17
- 'B' EDG fuel oil and air start systems as the protected diesel on October 25

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, CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Dominion staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

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

a. Inspection Scope

On October 24, the inspectors performed a complete system walkdown of accessible portions of the Unit 3 LPSI system to verify the existing equipment lineup would allow for successful implementation of Dominion's operating procedures. The inspectors reviewed 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

- Upper 6.9 kV and 4.16 kV switchgear area (Fire Area T-10) on October 30
- Operating floor and turbine deck 54'6" elevation (Area T1-F) on November 20
- Auxiliary building HPSI pump room (Fire Area A-4) on December 13
- Auxiliary building charging pump room (Fire Area A-6A) on December 13

Unit 3

- Containment (Fire Area R) on October 20

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on November 20 that involved a simulated fire in the Unit 2 turbine building at the 54'6" elevation. The simulated fire was at the turbine bearing. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that Dominion personnel identified deficiencies, openly discussed them in a self-critical manner at the drill critique, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

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

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.1 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 Unit 3 east and west switchgear areas (4'-6"), 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.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the Unit 2 'C' reactor building closed cooling water heat exchanger 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 observed in-process eddy current testing (ECT), performed an independent visual inspection of the heat exchanger, and reviewed the results of previous inspections. 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 (71111.08P - 1 sample)

Unit 3

a. Inspection Scope

From October 23 to November 2, the inspectors conducted an inspection of Dominion's third period, third interval in-service inspection activities during the Millstone Unit 3 refueling outage (3R18). Inspection samples were chosen based on the procedure objectives and areas 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 American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) 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. The inspectors verified that the NDE activities were performed in accordance with the ASME BPV Code applicable examination procedures and industry guidance.

- Remote observation of a sample of bare metal visual (BMV) examinations performed of the reactor vessel upper head penetrations performed in accordance with ASME Code Case N-729-4;

- Remote observation of a sample of ultrasonic testing (UT) of the reactor vessel upper head penetrations performed in accordance with ASME Code Case N-729-4;
- Direct observation of manual UT of the 'D' RCS loop stop valve bonnet studs (component ID RCS-V-8-XX);
- Record review of the BMV examinations of 1B and 1D steam generator (SG) channel head drain lines performed in accordance with ASME Code Case N-722-1 (component ID SG-1B(D) CH drain);
- Record review of the BMV examination of the reactor vessel head vent line weld performed in accordance with ASME Code Case N-722-1 (component ID RV head vent FW-1); and
- Record review of manual UT of 'B' RCS branch line welds performed in accordance with industry initiative MRP-146, "Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines," (component ID RCS-10-FW-24-1, RCS-10-FW-25-1, and RCS-10-FW-26-1).

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 were reviewed and evaluated by certified NDE personnel as required by the ASME Code or Dominion procedures.

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

The inspectors performed direct observation and record review of the Millstone Unit 3 repair/replacement activity associated with the replacement of the 'A' reactor plant component cooling water heat exchanger (M33CCP*E1A). The inspectors observed in-field welding of the reconnecting of the service water-side piping to the replacement heat exchanger. The inspectors reviewed the ASME Section XI Repair/Replacement Program procedure, work order 53103005951, procedure qualification record, welder performance qualifications, welding technique sheet for welding technique 4204, and penetrant testing NDE examination report. The inspectors reviewed the repair activity to verify the welding and applicable NDE activities were performed in accordance with ASME Section XI requirements.

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

Dominion performed BMV and UT examinations of the reactor vessel head penetrations at Millstone Unit 3 during the 2017 refueling outage (3R18). The inspectors reviewed the examination procedures, observed portions of the examinations, and reviewed post examination records to verify that activities were performed in accordance with ASME BPV Code Case N-729-4 and 10 CFR 50.55a(g)(6)(ii)(D) requirements. The inspectors also reviewed the personnel qualifications of the examiners performing the inspections and the Dominion NDE Level III personnel evaluating and accepting the results.

Boric Acid Corrosion Control Inspection Activities (IMC Section 02.03)

The inspectors reviewed the boric acid corrosion control program procedure and discussed the program with engineers that perform boric acid corrosion evaluations. The inspectors independently performed a walk down in containment to evaluate

Dominion's ability to identify boric acid. The inspectors also reviewed a sample of evaluations and corrective actions associated with boric acid found on safety significant piping and components inside containment during the 3R18 refueling outage to verify that evaluations met industry guidelines and that corrective actions assigned were consistent with the requirements of IWA-5250 of Section XI of the ASME Code and 10 CFR Part 50, Appendix B, Criterion XVI.

Steam Generator Tube Inspection Activities (IMC Section 02.04)

The inspectors reviewed the Millstone Unit 3 SG inspection plan, degradation assessment, and the condition monitoring and operational assessment for the 3R18 refueling outage. The SG inspection plan included ECT of all in-service tubes in the 'A' and 'C' SGs during the 3R18 refueling outage. The inspectors observed a sample of ECT of the 'C' SG tubes, reviewed ECT data of various tubes, and observed data analysis and resolution activities. The inspectors also reviewed the examination technique specification sheets used for the ECT examinations of the SG tubes to ensure the examination techniques being applied could accurately detect and size areas of degradation.

During the 3R18 refueling outage, Dominion staff determined that two tubes met or exceeded the 40 percent through wall TS plugging limit in the 'A' SG and that neither of the tubes required in-situ pressure testing. The inspectors reviewed the ECT data for the two tubes and compared that data to the in-situ pressure testing criteria described in the degradation assessment. The inspectors concluded that although the two tubes exceeded the TS limit for through wall degradation, the threshold for in-situ pressure testing was not exceeded. The inspectors noted that plugging these two tubes brought the total percentage of tubes plugged in 'A' SG to 0.91, which is below the design plugging limit of 10 percent for the SG.

The inspectors verified that the SG examination and repair activities were performed in accordance with the Dominion Steam Generator Program, TS for Millstone Unit 3, Electric Power Research Institute Pressurized Water Reactor Steam Generator Examination Guidelines, and the ASME Boiler and Pressure Vessel Code, Section XI.

Identification and Resolution of Problems (IMC Section 02.05)

The inspectors reviewed a sample of Millstone Unit 3 CRs associated with NDE activities, welding, boric acid corrosion control, and SG primary and secondary side issues since the previous outage and during the current outage. The inspectors verified that nonconforming conditions were identified and dispositioned in accordance with Dominion's CAP procedure, and that corrective actions were assigned based on the safety significance of the issue.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance
(71111.11Q – 4 samples, 71111.11A – 2 samples, 71111.11B – 1 sample)

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

a. Inspection Scope

Unit 2

The inspectors observed Unit 2 control room simulator licensed operator regualification training on December 12. The inspectors evaluated operator performance during the ATWS, LOCA and SGTR events and verified completion of risk significant operator actions, including the use of alarm response and 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.

Unit 3

The inspectors observed Unit 3 simulator Just-In-Time training on October 3. The training included both classroom training and time on the simulator. Specifically, the inspectors observed licensed operators practicing feedwater maneuvers, power reductions while removing one feed pump from service, and placement of residual heat removal in service in preparation for the Unit 3 refueling outage. The inspectors evaluated operator performance through these activities and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures where applicable. 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. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

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

a. Inspection Scope

Unit 2

The inspectors observed Unit 2 operator performance during an emergent downpower to support moisture separator reheater drain tank level control valve failure on November 1. The inspectors evaluated operator performance during the actual power maneuvers to verify the use of normal and abnormal operating procedures. The inspectors assessed

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

Unit 3

The inspectors observed Unit 3 operator performance during shutdown activities on October 12. The inspectors also observed operations personnel conduct low power physics testing during initial startup of the reactor core on November 12 and 13. The inspectors observed infrequently performed test or evolution briefings, pre-shift briefings, and reactivity control briefings to verify that the briefings met the criteria specified in procedure OP-AA-100, "Conduct of Operations," and procedure OP-AA-106, "Infrequently Conducted or Complex Evolutions."

b. Findings

No findings were identified.

.3 Licensed Operator Regualification (71111.11A – 2 samples)

a. Inspection Scope

On December 27, an NRC region-based inspector conducted an in-office review of results of the Unit 2 and Unit 3 licensee-administered annual operating test for operators.

Examination Results

Regualification exam results (annual operating test) for 2017 were reviewed to determine if pass/fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11, and NRC Inspection Manual Chapter 0609, Appendix I, "Operator Regualification Human Performance Significance Determination Process (SDP)." The review verified that the failure rate (individual or crew) did not exceed 20 percent.

Unit 2

- The overall individual failure rate was 2.3 percent.
- The overall crew failure rate was 0.0 percent.

Unit 3

- The overall individual failure rate was 0.0 percent.
- The overall crew failure rate was 0.0 percent.

b. Findings

No findings were identified

.4 Licensed Operator Regualification (71111.11B – 1 sample)

Unit 3

a. Inspection Scope

The following Unit 3 inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11, and Inspection Procedure Attachment 71111.11, "Licensed Operator Regualification Program and Licensed Operator Performance."

Written Examination Quality

The inspectors reviewed three written examinations (reactor operator and senior reactor operator) administered during the 2016 examination cycle for qualitative and quantitative attributes as specified in Appendix B of Attachment 71111.11, "Licensed Operator Regualification."

Operating Test Quality

The inspectors reviewed eight scenarios and ten job performance measures (JPMs) for qualitative and quantitative attributes as specified in Appendix C of 71111.11, "Licensed Operator Regualification Program."

Licensee Administration of Operating Tests

Observations were made of the Unit 3 dynamic simulator exams and JPMs administered during the week of November 27. These observations included facility evaluations of crew and individual performance during the dynamic simulator exams and individual performance of JPMs.

Examination Security

The inspectors assessed whether facility staff properly safeguarded exam material. JPMs, scenarios, and written examinations were checked for excessive overlap of test items.

Remedial Training and Re-Examinations

The inspectors reviewed one complete remediation package to assess the effectiveness of the remedial training.

Conformance with Operator License Conditions

Medical records for ten licensed operators were reviewed to assess conformance with license conditions. All records reviewed were satisfactory.

Proficiency watch standing records for an operating crew of licensed operators were reviewed. All active licensed operators met the watch standing requirements to maintain an active license.

The reactivation plans for three licensed operators were reviewed to assess the effectiveness of the reactivation process. The reactivation was successfully processed in accordance with site procedures.

Records were reviewed for the participation of an operating crew of licensed operators in the requalification program from January 2016 through September 2017.

Simulator Performance

Simulator performance and fidelity was reviewed for conformance to the reference plant control room. A sample of simulator deficiency reports was reviewed to ensure facility staff addressed identified modeling problems. Simulator test documentation was also reviewed.

Problem Identification and Resolution

A review was conducted of recent operating history documentation found in inspection reports, Dominion's CAP, and the most recent NRC plant issues matrix. The inspectors also reviewed specific events from Dominion's CAP that indicated possible training deficiencies to verify that they had been appropriately addressed. These reviews did not detect any operational events that were indicative of possible training deficiencies.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 5 samples)

a. Inspection Scope

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

Unit 2

- 'B' EDG fuel injection subsystem on October 26
- 'C' reactor building closed cooling water heat exchanger (M2X18C) on December 12

Unit 3

- 'A' EDG October maintenance outage on October 14
- LPSI on October 24
- Rod control system on November 21

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

- Elevated unit risk due to south bus outage and Unit 3 RSST unavailable on October 24
- High winds and rain resulting in water intrusion into upper switchgear room and under protected 'B' EDG output breakers while Unit 3 RSST unavailable on October 30
- Operation with both 'A' and 'B' power operated relief valve (PORV) block valves closed on November 26

Unit 3

- Establishing conditions for reactor head de-tensioning and vessel disassembly on October 17
- LPSI on October 24
- 'B' EDG risk associated with the outage of the RSST on October 25
- Planned surveillance test on fire transfer switch panel PORV (3RCS*PCV455A) during solid plant operations in mode 5 on November 8

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)a. Inspection Scope

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

Unit 2

- 'B' HPSI train, 'D' RCS loop injection valve motor operator loss of power on October 5
- Through wall leakage in service water piping to 'C' turbine building closed cooling water heat exchanger on October 16
- High winds and rain resulting in water intrusion into upper switchgear room and under 'B' EDG output breakers on October 30
- Gas voiding in ECCS/LPSI injection line on October 31
- Reactor protection system (RPS) matrix logic test failure on November 2
- Failure of 480 VAC bus 22B on November 28

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. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Dominion.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 4 samples).1 Temporary Modificationa. Inspection Scope

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

Unit 2

- Reconfiguration of RPS trip status mimic on November 2

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

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

Unit 2

- Change in feedwater pump low suction pressure trip and plant full power condensate configuration from three pump operation to two pump operation on November 1

Unit 3

- 'A' EDG governor and slow speed start modification on October 14
- Design change for the safety injection accumulator fill skid on November 4

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 9 samples)

a. Inspection Scope

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

Unit 2

- RPS matrix logic circuit after reconfiguration on November 2

Unit 3

- 'A' EDG October maintenance outage on October 14
- 'A' EDG breaker panel board (3EGS*PNL1A) breaker replacement and equivalent evaluation on October 20
- 'B' auxiliary feedwater flange (3FWA*FLS1B) leak repair on October 30
- PORV actuator maintenance - inadequate voltage on November 4
- Boric acid leak from bellows of 3CHS*RV8119 on November 7
- Auxiliary feedwater train 'A' and 'B' valve stroke time test after instrument calibration on November 8
- Feedwater isolation valve (M33FWS*SOV41C) solenoid replacement on November 8
- Replacement of isolation valve 3MSS*V78 for instrument MSS-F512A on November 14

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 3 maintenance and refueling outage (3R18), conducted October 12 through November 14. The inspectors reviewed Dominion's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

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

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

b. Findings

Introduction. A self-revealed NCV of very low safety significance (Green) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when during solid-plant cooldown, Dominion failed to maintain RCS pressure in accordance with the limits established by Millstone Power Station General Operating Procedure OP 3208, "Plant Cooldown," Revision 028.

Description. At 2120 on October 13, with Unit 3 in Mode 5 during solid plant cooldown, a portion of the instrument air system was isolated in support of the 'A' component cooling water heat exchanger replacement project. When instrument air was isolated to charging flow control panel 3CHS-PNL01, charging flow control valve 3CHS*FCV121 failed full-open, which maximized charging flow into the RCS. With the plant in solid RCS conditions (i.e., the pressurizer is 100 percent full of water), the increased charging flow resulted in a rapid rise in RCS pressure and the subsequent lifting of the residual heat removal system suction relief valves, as designed. Over the course of approximately 18 seconds, the RCS pressure increased from 350 psia to approximately 472 psia. At the time of the transient, the RCS temperature was approximately 169°F. Dominion operations staff recognized the increased charging flow and restored instrument air in accordance with contingency actions that were in place for this work activity.

Step 4.4.3.g of OP 3208 required operators to maintain RCS pressure within the limits established by Attachment 1, "RCS Cooldown Curves," which incorporated the pressure/temperature limits of TS 3.4.9.1. The maximum allowable RCS pressure at the time of the event was 435 psia. Therefore, Dominion failed to maintain RCS pressure in accordance with approved plant procedures and TS limits.

Figures 3.4-2 and 3.4-3 of TS 3.4.9.1 established operating limits on RCS pressure and temperature that included uncertainty margins to ensure that the limits of 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements," and ASME BPV Code, Section XI, Appendix G, 1995 edition were not exceeded during normal operation.

In the event that RCS pressure was not maintained within these limits, ACTION b.2 of TS 3.4.9.1 required an evaluation to determine the effect on the structural integrity of the reactor coolant pressure boundary components. Dominion entered ACTION b.2 and completed an engineering evaluation, prior to entering Mode 4, and concluded that the RCS was acceptable for continued operation. The engineering evaluation verified that the limits of 10 CFR Part 50, Appendix G and ASME Section XI, Appendix G were not exceeded. Moreover, Dominion also entered TS 3.4.9.3, Action f, which required that Dominion submit a special report to the NRC within 30 days. This report was submitted on November 7 (ML17319A089).

In preparation of the component cooling water heat exchanger replacement project, licensee staff were required to implement OP-AA-200, "Equipment Clearance," which established the responsibilities, authorities, and methodologies to implement the clearance process. Section 3.4.1.i of this procedure provided specific caution when instrument air supplies were to be isolated. A tagout was developed and authorized that did not correctly identify the impact of isolating air to 3CHS-PNL01. Moreover, the licensee failed to properly evaluate the risk of performing this work while the RCS was in a solid condition. Dominion entered this issue into the CAP as CR 1080842 and completed a root cause evaluation of the event. Dominion's corrective actions included revision to operations procedures to enhance administrative controls for maintaining RCS pressure and temperature during solid plant operations. Moreover, Dominion took action to provide lessons learned and operating experience with station personnel to ensure staff have a heightened sensitivity to solid plant operations, including the scheduling of outage and configuration control activities that may impact RCS pressure or temperature while the system is solid.

Analysis. The inspectors determined that the failure to maintain RCS pressure during solid plant cooldown in accordance with operating procedure OP 3208 was a performance deficiency that was reasonably within Dominion's ability to foresee, correct, and prevent. This performance deficiency was determined to be more than minor because it adversely affected the configuration control attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers (RCS) protect the public from radionuclide releases caused by accidents or events. Specifically, during solid plant cooldown, Dominion failed to maintain RCS pressure within the limits established by Attachment 1 of OP 3208 and TS 3.4.9.1. The exceedance of these limits required an engineering evaluation to determine the effects of the out of limit condition on the structural integrity of the RCS.

The inspectors determined the finding could be evaluated using IMC 0609, Attachment 0609.04, "Initial Characterization of Findings." Because the finding pertains to an event while the plant was shut down, the inspectors screened the finding through IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," using Exhibit 4, "Barrier Integrity Screening Questions." The finding screened to be of very low safety significance (Green) because it was determined that the RCS pressure did not exceed the pressure limits of 10 CFR Part 50, Appendix G or ASME Section XI, Appendix G and all of the questions in Exhibit 4 of IMC 0609, Appendix G, Attachment 1 were answered "No."

The inspectors concluded that this finding had a cross-cutting aspect in the area of Human Performance related to Work Management because the licensee did not implement an adequate process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. Specifically, Dominion failed to recognize the increased risk of isolating instrument air during solid plant operations. [H.5]

Enforcement. 10 CFR Part 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 these instructions, procedures, or drawings." Step 4.4.3.g of Section 4.4, "Solid Plant Cooldown," of

Millstone Power Station General Operating Procedure OP 3208, "Plant Cooldown," Revision 028, states, "MAINTAIN RCS pressure in the recommended operating region as specified in Attachment 1 (RCS Cooldown Curves)..."

Contrary to the above, on October 13, Dominion failed to accomplish an activity affecting quality, plant cooldown, in accordance with approved procedures. Specifically, during solid plant cooldown, over the course of 18 seconds, RCS pressure increased from 350 psia to 472 psia, which exceeded the limit of 435 psia established by Attachment 1, "RCS Cooldown Curves," of OP 3208, "Plant Cooldown."

Dominion operations staff took prompt actions to restore RCS pressure to within limits and completed an engineering evaluation to determine the effects of the out of limit condition on the structural integrity of the RCS. Dominion entered this issue into the CAP as CR 1080842 and completed a root cause evaluation of the event. Because this violation was of very low safety significance (Green) and was entered into Dominion's CAP, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05000423/2017004-01, Failure to Maintain RCS Pressure during Solid Plant Cooldown**)

1R22 Surveillance Testing (71111.22 – 14 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

- Gas Accumulation Verification, Facility 1 and Common Header, on October 31
- RPS channel 'B' high power trip test on November 7

Unit 3

- Electrical penetration of containment for reactor coolant pumps on October 8 (CIV)
- Main steam relief valve testing on October 11
- 'A' EDG October maintenance outage on October 14
- Supplementary leak collection and recovery system (SLCRS) drawdown test in mode 5 from the Unit 3 control room on October 15
- Loss of offsite power/loss of coolant accident train 'A' test on October 15
- Train 'A' engineered safety features with loss of power test infrequently conducted or complex evolution on October 16
- Type C local leak rate testing – Penetration No. 26(i) [3CHS*V58] on October 26 (CIV)

- 'A' residual heat removal pump comprehensive operational test and check valves 3RHS*V1 and 3SIL*V3 flow test on November 2 (IST)
- 'A' & 'B' safety injection pump comprehensive operational test on November 5 (IST)
- 'A', 'B', 'C' charging pump comprehensive operational test on November 5 (IST)
- Fire transfer switch panel operational testing 3RCS*PCV455A (PORV) on November 8
- 'A' & 'B' motor driven auxiliary feedwater pump comprehensive operational test on November 8 (IST)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

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

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

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – 4 samples)

a. Inspection Scope

The inspectors reviewed Dominion's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained

in 10 CFR Part 20, TSs, Regulatory Guide 8.38, and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

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

Radiological Hazards Control and Work Coverage (1 sample)

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

Risk-Significant HRA and VHRA Controls (1 sample)

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

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.

Problem Identification and Resolution (1 sample)

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

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (2 samples)

a. Inspection Scope

The inspectors sampled Dominion's submittals for the Safety System Functional Failures PI for both Unit 2 and Unit 3 for the period of October 1, 2016, through September 30, 2017. To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed Dominion's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, CRs, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 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, 2014, through September 30, 2017:

- Unit 2 Emergency AC Power System
- Unit 3 Emergency AC Power System
- Unit 2 High Pressure Injection System
- Unit 3 High Pressure Injection System
- Unit 2 Heat Removal System
- Unit 3 Heat Removal System
- Unit 2 Residual Heat Removal System
- Unit 3 Residual Heat Removal System
- Unit 2 Cooling Water System
- Unit 3 Cooling Water System

To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed Dominion's operator narrative logs, CRs, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.3 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The inspectors reviewed Dominion's submittals for the occupational radiological occurrences PI for the third quarter 2016 through the third quarter 2017. The inspectors used PI definitions and guidance contained in NEI 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walkdowns of various LHRA and VHRA entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed Dominion's submittals for the radiological effluent TS/Offsite Dose Calculation Manual radiological effluent occurrences PI for the third quarter 2016 through the third quarter 2017. The inspectors used PI definitions and guidance contained in NEI 99-02, Revision 7, to determine if the PI data was reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data was accurately calculated and reported.

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

b. Findings

No findings were identified.

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

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant

status reviews to verify Dominion entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings.

b. Findings

No findings were identified

.2 Annual Sample: Chronic Tritium Contamination of the Condensate Drawdown and Makeup System

a. Inspection Scope

The inspectors reviewed Dominion's actions associated with the discovery of radioactive tritium contamination in the condensate drawdown and makeup system (CNS) at Millstone Unit 3.

The event was first documented in CR 1048909 "False Positive Tritium Results on Vent Samples," written on September 28, 2016. A second (companion) CR, CR 1052791, "Tritium is Periodically Found in MP3 Lab Water," was written on November 3, 2016, to document that Unit 3 demineralized laboratory wash water was found to be contaminated with tritium and that this was the cause of the false positive results on "vent samples."

During the various inspection efforts, the inspectors observed an air-operated valve in the condensate demineralizer system, and walked down portions of the CNS piping, the condensate surge tank, the condensate storage tank, their cross-tie valve, the associated check valves, and the isolation valve between the CNS and the condensate demineralizer system with a chemistry supervisor and a system engineer. The inspectors toured the Unit 3 chemistry laboratory, examined piping diagrams for the condensate demineralizer system and the CNS system, performed a table-top review of C OP 200.11, "Operation of Cross Contaminated System," with a chemistry manager and a Unit 3 Shift Manager, held meetings with the Manager of Organizational Effectiveness regarding the trending program and the CAP, examined several Radiological Environmental Reviews and Health Physics Memos regarding the potential impacts from the tritium contamination, and reviewed chemistry sample results for tritium in lab water and in the condensate surge tank.

b. Findings and Observations

No findings were identified.

Dominion's CAP documents indicate that the source of the tritium contamination of the CNS system was several leaking valves in the condensate demineralizer system (which normally contains low levels of tritium) and a leaking manually-operated isolation valve (which connects the demineralizer recycle header portion of the condensate demineralizer system to the CNS system). The conditions by which the tritium can cross-contaminate the CNS system require a particular system line-up and only occur for

short durations. A similar tritium cross-contamination event was documented in 2005, and leaking isolation valves in the condensate demineralizer system have been documented as a chronic problem since 2005.

The inspectors identified two performance deficiencies.

In the first deficiency, the inspectors determined that Millstone staff did not follow procedure C OP 200.11, "Operation of a Cross Contaminated System," Revision 004-02 as written during the evaluation of tritium found in the CNS in November 2016. This was verified on July 13, 2017, when the inspectors performed a table-top review of the procedure with a Chemistry Department representative and a Unit 3 Shift Manager who utilized this procedure in response to the tritium contamination of the CNS in late 2016.

Specifically:

- Millstone personnel indicated that in Step 4.1.3 of the procedure, they referred to Attachment 2 and did find that the affected system was listed as a "Site Systems Identified that Meet IE 80-10 Criteria." The system listed was "Condensate and Feed System."
- Millstone personnel indicated that they determined that the CNS was part of the "Condensate and Feed System" after consultation with the appropriate system engineer. The rationale was that "although they are treated as separate systems, for the purpose of impacts of cross-contamination by tritium, they can be treated the same because of the common water source."
- Millstone personnel indicated to the inspectors that they completed procedure Step 4.1.4 (comparison of tritium levels to limits in Attachment 2) and then exited the procedure at Step 4.1.5.c.

The inspectors determined that it was inappropriate to consider the CNS system as part of the "Condensate and Feed System" as listed on Attachment 2. This is because:

- Station specification SP-M3-ME-024, Revision 0, defines a "system" as an assemblance of components (pipes, valves, pressure vessels, motors, etc....) that perform a function or provide a service and has a unique system identifier associated with it. The CNS, the condensate demineralizer system, the condensate system, and feedwater systems all have unique identifiers as described in the FSAR and as designated on piping diagrams.
- The CNS has temperature and pressure ratings that are significantly different than that of the nearby condensate system.
- The function and purpose of the CNS is to provide pure makeup water to various secondary plant systems, including the chemistry laboratory and the condensate demineralizer recycle header, whereas the condensate system delivers condensed steam to the feedwater system.
- The CNS is not expected to be contaminated with radioactive tritium, the condensate system is expected to be so contaminated.
- The water source for the condensate system is the main condenser, the water source for the CNS system is the condensate storage tank. They do not share a common water source.

Furthermore, the inspectors determined that it was inappropriate to exit procedure C OP 200.11, Revision 004-02, at Step 4.1.5.c on or about November of 2016 when the tritium contamination of the CNS was discovered. Specifically:

- Step 4.1.5 directs the user to compare contamination levels to limits on Attachment 2 and directs the user to initiate a CR, take corrective actions, consider new or additional sources of contamination, and exit the procedure if the levels are above the “Alert Level” but below the “Fixed Activity Limit.” Tritium levels in the CNS system were not above the alert level. Step 4.1.5 should have been passed-over, leading to Step 4.1.6.
- Step 4.1.6 provides three criteria by which a system may be considered to be an IE 80-10 system as listed on Attachment 2 of the procedure. All three criteria must be met. Step 4.1.6 is not functional because one of the criteria can never be met, and another criteria refers to guidance in Attachment 1 which does not adequately reflect the IE 80-10 criteria. Since Millstone determined that the CNS was listed on Attachment 2, Step 4.1.6 would be skipped, leading to Step 4.1.7.
- Step 4.1.7 leads the reader to Section 4.2 and an additional series of actions. This was not done.

Therefore, the inspectors determined that the incorrect classification of the CNS, and inappropriately exiting the procedure at Step 4.1.5.c, led to a failure to perform several actions that are important to the guidance provided in IE 80-10 for the discovery of a contaminated system. These include:

- The performance of a 10 CFR 50.59 screening or evaluation for the CNS cross-contamination;
- An establishment of radiological controls for the system;
- The development of a system decontamination plan and acceptance criteria;
- The identification of potential environmental release permitting (NPDES) release paths, and;
- The evaluation of any inadvertent chemical release issues.

The inspectors reviewed licensee-provided engineering determinations and environmental assessments and determined that the tritium contamination of the CNS had a minimal impact on plant operation, on human health, and on the environment; with potential radiation doses to the general public or plant workers at a very small fraction of established limits.

Using IMC 0612, Appendix B, “Issue Screening,” the inspectors determined that this performance deficiency was not more than minor in its significance. Specifically, the deficiency could not be reasonably viewed as a precursor to a significant event, did not have the potential to lead to a more significant safety concern, would not have caused a PI to exceed a threshold, and did not adversely affect a cornerstone objective. The inspectors reached this determination based on their determination that underlying cause of the issue being the incorrect classification of the CNS. Dominion wrote CR 1084148 to address the deficiency.

In the second deficiency, contrary to MP-PROC-000-PI-AA-200, “Corrective Action,” Revision 33, a series of leaking valves in the condensate demineralizer system, for

which CRs were written and classified as “conditions adverse to quality,” were not identified as “potential repeat” events, or as a potential “adverse trend.”

Specifically, procedure Step 5.3.35 defines potential repeat as: “an identified condition (failure, problem, or deficiency) that has had a previous occurrence documented within the Corrective Action Program. When determining if a significance level 3 event is a potential repeat, review events for the previous three years...”.

Procedure Step 5.3.1 defines an adverse trend as: “A series of events in which the frequency combined with their significance warrant evaluation for corrective action.” This may include:

- A significant increase in the number of events in an area or activity when compared to another time period;
- Multiple occurrences of a specific event; and
- Multiple occurrences of a general type of event that share a close or common cause.

Procedure Step 3.4.1 directs the Condition Report Team to “Perform cognitive trending of CRs as they are reviewed.”

Procedure Step 3.4.3.c directs the Condition Report Team to “Determine level of evaluation desired for deviating conditions using Attachment 6 by applying the significance level and the type of deviation condition using Attachment 7.”

Between August 2016 and December 2016, four CRs were written regarding leaking valves in the condensate demineralizer system, which resulted in unintended pressurization of the condensate demineralizer recycle header to approximately 500 psig (i.e., CR 1045292, CR 1046621, CR 1052162, and CR 1056066).

All four CRs were classified as “conditions adverse to quality” and screened as a significance level 3. Contrary to procedure MP-PROC-000-PI-AA-200, Step 5.3.35, three of these were not identified as potential repeat conditions. All four events occurred within a one-year period. Contrary to procedure MP-PROC-000-PI-AA-200, Step 5.3.1, the series of leaking valves was not identified as an adverse trend, despite “multiple occurrences of a specific event.” Contrary to procedure MP-PROC-000-PI-AA-200, Step 3.4.1, cognitive trending of the CRs did not identify the potential adverse trend.

MP-PROC-000-PI-AA-200, Attachment 6, “CAQ Screening Matrix,” is used to determine the type of evaluation to perform for conditions adverse to quality. Contrary to column 3, row three of Attachment 6, and due to the previously described errors, an apparent cause evaluation was not assigned to the potential repeat condition of leaking valves in the condensate demineralizer system.

The inspectors also noted that a very comprehensive Request for Engineering Assistance regarding the potential for tritium cross-contamination of the CNS system was written by the Chemistry Department in 2010. This attempt at correcting the conditions leading to tritium contamination was cancelled with no action taken. The reason(s) for the cancellation could not be explained to the inspectors by Dominion personnel.

The inspectors previously determined that the tritium contamination of the CNS had a minimal impact on plant operation, on human health, and on the environment. The failure to identify the potential repeat and/or potential adverse trend in leaking valves in the condensate demineralizer system (leading to unwanted pressurization of the recycle header) may have caused a delay in taking appropriate corrective action. Prompt corrective action might have prevented the false positive indication of tritium in the chemistry “vent” samples.

Using IMC 0612, Appendix B, “Issue Screening,” the inspectors determined that this performance deficiency was not more than minor in its significance. Specifically, the deficiency could not be reasonably viewed as a precursor to a significant event, did not have the potential to lead to a more significant safety concern, would not have caused a PI to exceed a threshold, and did not adversely affect a cornerstone objective. Dominion wrote CR 1084150 to address the deficiency.

.3 Annual Sample: Failure of Supplemental Leak Collection Release System Door A-24-4

a. Inspection Scope

The inspectors performed an in-depth review of Dominion’s apparent cause evaluation and corrective actions associated with CR 1058241, Unit 3 TRM fire and SLCRS door A-24-4 stuck open. This CR was associated with Licensee Event Report (LER) 05000423/2017-001-00: Loss of Safety Function – Secondary Containment, dated March 20, 2017, and Event Number 52501, dated January 20. This door, A-24-4, is part of the secondary containment boundary which must be intact for the SLCRS to perform its safety function. As a result, the failure of this door to close rendered the secondary containment inoperable from 8:35 am to 12:56 pm on January 20.

The inspectors assessed Dominion’s problem identification threshold, cause analyses, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether Dominion was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Dominion’s CAP and 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

Dominion determined the direct cause of the door becoming stuck open was the failure of the hydraulic door closer due to high usage. A new door closer was promptly installed and new preventative maintenance tasks were created to replace the door closer devices on a 4-year frequency. During the extent of condition review, door A-24-10 was identified as another high traffic door that contained the same door closer device. The A-24-10 door closer was replaced per work order 53103065851 on April 26.

The inspectors performed an independent review of corrective action records related to door failures and did not identify any relevant occurrences that Dominion had not already considered in their apparent cause evaluation. However, the inspectors did note that CR 1083716, dated November 12, described a subsequent failure of door A-24-4. The inspectors reviewed the CR to determine whether previous corrective actions taken to

address CR 1058241 were effective. The inspectors noted that the subsequent failure of this door was not related to the closer and that the stuck open door did not constitute a loss of safety function because the door was not stuck open wide enough to challenge the supplemental leak collection release system.

The inspectors determined Dominion's overall response to the issue was commensurate with the safety significance, was timely, and included appropriate compensatory actions.

.4 Annual Sample: Effectiveness of Corrective Actions for Motor Operated Valves Deficiencies

a. Inspection Scope

The inspectors reviewed 37 CRs involving motor operated valve (MOV) problems identified and entered into the CAP by Dominion staff over the past four years. These problems were identified through testing and inspections of safety-related MOVs in systems from Millstone Units 2 and 3. The problems involved instances where torque or thrust test acceptance criteria were not met, observations involving degraded grease, calculation errors, and in one instance, a motor stall condition identified during testing after maintenance was performed. Additionally, the inspectors performed a review of the Millstone high pressure to low pressure system isolation valves program to verify that the MOVs design limits properly included the maximum expected differential pressure that would result from a postulated back-leakage thru the isolation valves. The inspectors reviewed Dominion's corrective actions reports, a sample of diagnostic and stroke time test data, and interviewed plant personnel to evaluate the adequacy of Dominion's corrective actions. Finally, the inspectors visually inspected 21 MOVs and reviewed MOV program procedures, drawings, and system health reports to evaluate the quality and effectiveness of the Dominion MOV program as implemented at Millstone Power Station.

The inspectors assessed Dominion's problem identification threshold, assessment and operability determinations for each of the identified issues, extent of condition reviews, and the prioritization and timeliness of corrective actions to determine whether Dominion staff was appropriately identifying, characterizing, and correcting problems associated with MOVs and whether the corrective actions were appropriate. The inspectors compared the actions taken to the standards in Dominion's CAP and regulatory requirements in 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

The inspectors determined the deficiencies had been properly entered in the Millstone CAP for evaluation, extent of condition review, and corrective actions. The inspectors verified that for the identified problems Dominion staff properly evaluated the issues and determined sufficient margin remained and the valve design limits had not been exceeded. Additionally, for thrust related problems the inspectors determined Dominion's evaluations determined the structural capability of the valves was maintained such that the identified deficiencies did not impact operability of the valves.

For example, CR 1035455 documented the safety injection accumulator tank #3 outlet isolation valve (3SIL*MV8808C) exceeded as-left testing close total thrust test limit due to a decrease in stem to stem nut coefficient of friction. The evaluation concluded the structural limit of the valve was not exceeded and the valve remained capable of performing its design safety function. Corrective actions included adjustments of the torque switch and satisfactory as-left testing. Additionally, CR 1066417 evaluated degraded grease identified on the valve stem for a SG main steam isolation bypass valve (2-MS-65A). This valve has a safety function to close and is located in a high ambient temperature area. The inspectors verified valve operability was properly demonstrated via a satisfactory as-found MOV static test and adequate corrective actions were completed including sampling, cleaning, and removal of the old grease; lubrication of the valve stem; and a satisfactory as-left diagnostic test. For a problem involving a locked rotor and motor stall (CR 564011 related to valve 3CHS*MV8109B), the inspectors determined the condition was introduced during valve packing maintenance and corrected prior to placing the valve in service.

For the MOV issues reviewed, the inspectors concluded that Dominion staff completed timely and appropriate actions to address the applicable deficiencies and that associated corrective actions including preventive maintenance reviews and implementation frequency adjustments, are being properly tracked, appropriately documented, and completed as scheduled. In addition, the inspectors concluded that applicable MOVs for both Units 2 and 3 had been properly sized and designed for the maximum expected pressure that would result from back leakage from a high pressure system into a low pressure system.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 2 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 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.

- Notice of Unusual Event for explosive gas in the Unit 3 turbine building on October 9

b. Findings

No findings were identified.

.2 (Closed) LER 05000423/2017-001-00: Loss of Safety Function – Secondary Containment

On January 20, 2017 while operating in mode 1 at 100 percent power, Dominion discovered that a door (A-24-4) in the auxiliary building failed to fully close. This door is part of the secondary containment boundary, which must be intact for the SLCRS to perform its safety function. As a result, the failure of this door to close rendered the secondary containment inoperable from 8:35 am to 12:56 pm on January 20, 2017. The inspectors did not identify any new issues during the review of the LER. The inspection of this issue is documented in section 4OA2.3. This LER is closed.

4OA6 Meetings, Including Exit

On January 17, 2018, the inspectors presented the inspection results to Mr. John Daugherty, Site Vice President, and other members of the Millstone staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Daugherty, Site Vice President
C. Olsen, Plant Manager
L. Armstrong, Director, Performance Recovery
J. Birch, Supervisor Nuclear Training
D. Blakeney, Assistant Plant Manager
R. Borchart, Senior Reactor Engineer
S. Brabec, Assistant Manager Outage and Planning
M. Bradley, Manager, Radiation Protection & Chemistry
C. Chatman, Unit 3 Shift Manager
F. Cietek, Consulting Engineer (PRA)
M. Cote, Supervisor Nuclear Training
D. Dodson, Supervisor - ISI/NDE Engineering
R. Garver, Director Engineering
M. Garza, Unit 2 Senior Nuclear Shift Operator
J. Go, Supervisor Nuclear Training
M. Goolsby, Unit 2 Operations Manager
J. Grogan, Operations Manager Unit 3
K. Hacker, Dominion Corporate Level III
M. Hall, Dominion Corporate Welding Engineer
R. Hanson, Manager Protection Services
J. Langan, Licensing Manager
D. Lawrence, Director, Nuclear Safety and Licensing
P. Malzahn, Nuclear Simulator Operations Coordinator
B. McDonald, Senior Instructor Nuclear Operations
H. McKenney, Corrective Action Supervisor
F. Newton, Superintendent Protection Services
M. O'Connor Manager Nuclear Operations
D. Rowe, Superintendent Nuclear Shift Operations Unit 3
R. Royce, Senior Instructor Nuclear Operations
S. Smith, Manager Outage and Planning
D. Smith, Site Emergency Preparedness Manager
J. Stafford, Manager Training
D. Stoddard, Supervisor Component Engineering
M. Sweet, Superintendent Health Physics Operations
E. Treptow, Manager Systems and Component Engineering
K. Underwood, Senior Instructor Nuclear Operations
R. Van-Steenbergen, MOV Program Engineer
C. Walsh, Manager Operations Training
B. Willkens, Manager Nuclear Organizational Effectiveness
M. Wynn, Superintendent Health Physics Operations
N. Yonker, Supervisor Nuclear Engineering Primary Systems

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

05000423/2017-004-01	NCV	Failure to Maintain RCS Pressure during Solid Plant Cooldown (Section 1R20)
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Closed

05000423/2017-001-00	LER	Loss of Safety Function – Secondary Containment (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**Procedures

OP 2268, Cold Weather Operation, Revision 005-04

C OP 200.13, Seasonal Weather Operations, Revision 005

C OP 200.13-002, Unit 2 Cold Weather Preparation Checklist, Revision 002-02

Condition Reports

1082515	1086025	1087137
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Work Orders

53102400631	53102419059	53102540242	53102597919
53102651518	53102683962	53102806129	53102815883
53102932531	53102989177	53103108557	53103117527
53203148309			

Miscellaneous

VTM 25205-010-002, GE 4.160 kV Switch Gear Vendor Manual

25203-39004, Electric Schematic, Sheet 35

25203-39004, Electric Schematic, Sheet 32A

98ENG02718C2, MP2 Auxiliary Building and Turbine Buildings, HELB Barrier Infiltration Analysis, Revision 00

NFPA 80, Section 2-1.5 & Section 4.8.4.1

MP-26-EPA-REF02, Millstone Unit 2 Emergency Action Level Technical Basis Document, Revision 026

PM RE604607, C OP 200.13 Attachment 2

Section 1R04: Equipment AlignmentProcedures

25212-26916 SH3, P&ID B EDG Lube Oil & Cooling Water, Revision 33

25212-26916 SH4, P&ID B EDG Air Start System, Revision 20

25212-30059 SH0, 480V MCC one line diagram Diesel enclosure and Auxiliary boiler A, Revision 37

OP 3330A-003, Reactor Plant Component Cooling Water Train A, Revision 011-00
 OP 3330A-016, Reactor Plant Component Cooling Water Train B, Revision 007-00
 SP 2604Z, ECCS, SDC and CS System Gas Accumulation Verification, Revision 006
 OP-AA-102, Operability Determination, Revision 15
 C CP 803.12-002, Gas Chromatograph Analysis Log, Revision 000
 OP 2310, Shutdown Cooling System Boron Equalization, Revision 011-01
 MP 2719H, EDG Fuel Supply System Maintenance, Revision 004-03

Work Orders

53102664709

Condition Reports

1042232	1070591	1079996	1082596
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Miscellaneous

Tagout Record Sheet SIL15-0600 for clearance, dated October 15, 2017
 Tagout Record Sheet SIL15-0500 for hanging, dated October 18, 2017
 Tagout Record Sheet SIL15-0305 for clearance, dated October 20, 2017
 Tagout Record Sheet SIL15-0304 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0303 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0302 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0301 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0101 for clearance, dated October 22, 2017
 Tagout Record Sheet SIL15-0100 for clearance, dated October 22, 2017
 ETE-CME-2015-1004, Basis of GL 2008-01 ECCS, DHR & CS Gas Accumulation Surveillance Program, Revision 1
 M2-EV-08-0027, Technical Evaluation for Generic Letter 2008-01 Response Millstone Unit 2, Revision 0
 ML110540393
 ML092960560
 25203-138-002, Installation, Operation and Maintenance of Emergency Diesel Engine, Coltec Industries

Drawings

25212-26912 SH1, P&ID Low Pressure Safety Injection, Revision 50
 25212-26912 SH2, P&ID Low Pressure Safety Injection, Revision 23
 25212-26912 SH3, P&ID Low Pressure Safety Injection/Containment Recirculation, Revision 38
 25212-26921, P&ID Reactor Plant Component Cooling Water, Sheet 1, Revision 34
 25203-26015, P&ID Low Pressure Safety Injection System, Sheet 1, Revision 50
 25203-26018, Piping & Instrument Diagram High Pressure Safety Injection System, Sheet 2, Revision 48

Section 1R05: Fire Protection

Procedures

SA-AA-115, Conduct of Fire Drills, Revision 2
 Millstone Unit 2 Fire Fighting Strategy for Fire Areas: T-1, T-1F
 Millstone Unit 2 Fire Hazards Analysis, Revision 13
 U3-24-FFS, Millstone Unit 3 Fire Fighting Strategies, Revision 0
 U2-24-FFS, Millstone Unit 2 Fire Fighting Strategies, Revision 0

Miscellaneous

MP-PROC-ENG-U2-24-FFS-BAP01-TB-Map, Revision 1

MP-PROC-ENG-U2-24-FFS-BAP01-AB-Map, Revision 1

Fire Hazard Analysis Boundary Drawing Auxiliary and Containment – El. -45'6", Sheets 1 and 2,
Revision 3

MP-PROC-ENG-U3-24-FSS-BAP01-RC-MAP, Revision 0

Section 1R06: Flood Protection MeasuresDrawings

25212-24260 Fire Hazard Analysis, Plan EL 3'-8", Revision 6

Section 1R07: Heat Sink PerformanceProcedures

ER-AA-HTX-1002, Heat Exchanger Program Visual and Leak Testing, Revision 5

ER-AA-HTX-10, Heat Exchanger Program, Revision 6

ER-AA-HTX-1003, Heat Exchanger Monitoring and Assessment, Revision 7

MP-20-WP-GDL40, Pre and Post Maintenance Testing, Revision 014

ER-AA-NDE-ET-501, Eddy Current Examination of Non-Ferromagnetic Tubing, Revision 1

MiscellaneousETE-MP-2016-1136, RBCCW Heat Exchanger Cleaning and Inspection Frequency and
Allowable Tube Plugging, Revision 0

RBCCW System Health Reports

System Monitoring Plan Requirements, Millstone Power Station Unit 2, dated 8/31/2017

DBS-2330A, Millstone Nuclear Power Station Unit 2, Design Bases Summary, Reactor Building
Closed Cooling Water System, Revision 0Corrective Action Records

CA 3024628	1020647	1056919
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Work Orders

53102749863	53102990512	53103009646	53103035652
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Section 1R08: In-service Inspection ActivitiesProceduresER-AA-CII-101, ASME Section XI Containment Inservice Inspection (Concrete/IWL) Program
Fleet Implementation Requirements, Revision 3ER-AA-CII-102, ASME Section XI Containment Inservice Inspection (Metal/IWE) Program Fleet
Implementation Requirements, Revision 3

ER-AA-ISI-100, Dominion Inservice Inspection Program, Revision 10

ER-AA-MAT-11, Alloy 600 Management Plan, Revision 14

ER-AA-NDE-UT-706, Ultrasonic Examination for the Detection of Laminar Indications,
Revision 1ER-AA-NDE-UT-804, Bore Probe Ultrasonic Examination of Studs and Bolts in Accordance with
ASME Section XI, Appendix VIII, Revision 2ER-AA-NDE-VT-604, Visual Examination (VE) for Leakage of PWR Reactor Head Penetrations,
Revision 3

ER-AA-RRM-100, ASME Section XI Repair/Replacement Program Fleet Implementation Requirements, Revision 6

ER-MP-BAC-101, Millstone Boric Acid Corrosion Control Planned Inspections, Revision 4
Millstone Unit 3 Inservice Inspection Program Manual, Third Ten-Year Interval, Revision 2

PI-AA-200, Corrective Action, Revision 33

Drawings

25212-20913, Millstone Unit 3 Reactor Coolant Piping – Loop 4 Zone 015, Weld Designations, Revision 4

Condition Reports

1032822	1034686	1034920	1036560
1049334	1052837	1058105	1071075
1077872	1080749	1080958	1081122
1081245	1081322	1081375	1081407
1081681	1081772	1081798	1081803
1081942	1082190	1082269*	1082609
1082618	1082619	1082710	

Miscellaneous

ETE-MP-2016-1149, Evaluation and Action Plan for Potential Wear of MPS3 Guide Cards, Revision 0

ETE-MP-2017-1159, Evaluation and Rework of Cladding Deformation on MPS3 Reactor Vessel Closure Head, Revision 0

M3UT 16B, Reactor Coolant Valve Stud 3" Dia x 20" L Calibration Block, Revision 1

NSAL-17-1, Guide Tube Guide Card Wear Attributed to Ion Nitride Rod Cluster Control Assembly, dated 1/16/2017

WTS-4204, Welding Technique Sheet 4204, dated 4/26/2006

PQR-4204, Procedure Qualification Record for Manual GTAW/SMAW, dated 4/26/2006

NDE Reports

2011 3R14 Refueling Outage, Reactor Vessel Head Bare Metal Visual Examination Final Report, dated 10/24/2011

BOP-PT-17-094, Final on FW 114, dated 10/26/2017

BOP-PT-17-081, Final on FW-116, dated 10/24/2017

M3-UT-16-054, Manual UT of RCS-513-FW-1, dated 4/26/2016

M3-UT-17-105, Manual UT of RCS-10-FW-24-1, dated 10/24/2017

M3-UT-17-107, Manual UT of RCS-10-FW-25-1, dated 10/24/2017

M3-UT-17-109, Manual UT of RCS-10-FW-26-1, dated 10/24/2017

M3-VT-17-242, BMV Examination of SG-1B CH Drain, dated 10/28/2017

M3-VT-17-244, BMV Examination of SG-1D CH Drain, dated 10/28/2017

M3-VT-17-261, BMV Examination of 413017-FW-1, dated 10/30/2017

M3-VT-17-262, BMV Examination of RV Head Vent FW-1, dated 10/30/2017

M3-VT-17-263, BMV Examination of RV Head Vent FW-1, dated 10/30/2017

M3-VT-17-264, BMV Examination of RV Head Vent SW-2, dated 10/30/2017

Millstone 3 – Outage 3R15, BMV Examination Final Report, dated 4/28/2013

Work Orders

53102954553 53103005951

Section 1R11: Licensed Operator Regualification ProgramProcedures

OP-AA-100, Conduct of Operations, Revision 33
 OP-AA-106, Infrequently Conducted or Complex Evolutions, Revision 10
 OP-AA-1800, Operator Fundamentals, Revision 10
 SP 31008, Low Power Physics Testing (ICCE), Revision 10
 OP 3204, At Power Operation, Revision 031
 OP 3206, Plant Shutdown, Revision 017
 OP 3208, Plant Cooldown, Revision 027
 TR-AA-710, NRC Exam Security Requirements, Revision 7
 TR-AA-730, Licensed Operator Biennial and Annual Operating Requal Exam Process, Revision 11
 TR-AA-750, Conduct of Simulator Training and Evaluation, Revision 7
 TR-MP-TPG-0300, Licensed Operator Regualification Program (LORP) Guide, Revision 1
 ARP 2590D-096, HTR DRAIN TK LEVEL HI/LO, Revision 0
 AOP 2575, Rapid Downpower, Revision 009-00
 SPROC OPS17-2-001, Millstone Unit 2 Full Power Operation with Two Condensate Pumps Evaluation, Revision 000
 OP 2204, Load Changes, Revision 036 One Time Only

Condition Reports

AR04050347	1008205	1042287	1076860
1076879	1080842		

Licensed Operator Regualification Examinations

Week 1 and Week 2 Written Exams, Job Performance Measures and Scenarios

Simulator Action Requests

DR 2015-3-0065	DR 2015-3-0076	DR 2016-3-0005
DR 2016-3-0052	DR 2017-3-0057	

Simulator-Related Test Documents

Transient Test T3, Simultaneous Closure of All MSIVs, Cycle 18, 12/19/16
 Transient Test T9, Maximum Size Unisolable Main Steam Line Rupture, Cycle 18, 12/12/16
 Transient Test T6, Turbine Trip without Reactor Trip
 100% Simulator Steady State Test, 8/29/16
 75% Simulator Steady State Test, 12/12/16
 50% Simulator Steady State Test, 12/27/16
 Normal Ops Test, Plant Load Increase to 100%, 4/28/16-
 LORT Simulator Module AOE #18
 Scenario Based Test, Scenario GS008A, Rev 4, Ch 1

Other

ACE (CA 3046964), Unit 2 2016 Annual Exam Not Administered Per TR-AA-730
 ACE (CA 3021343), AC Sources Surveillance Not Completed within 1 Hour Requirement
 ACE (CA 3031934), Turbine Tripped from 18% Reactor Power due to MSR High Levels
 RCE (CA 3033993), Manual Reactor Trip Following FW Isolation

Section 1R12: Maintenance Effectiveness

Procedures

ER-AA-HTX-1002, Heat Exchanger Program Visual and Leak Testing, Revision 5
 ER-AA-HTX-10, Heat Exchanger Program, Revision 6
 ER-AA-HTX-1003, Heat Exchanger Monitoring and Assessment, Revision 7
 MP-20-WP-GDL40, Pre and Post Maintenance Testing, Revision 014
 ER-AA-NDE-ET-501, Eddy Current Examination of Non-Ferromagnetic Tubing, Revision 1
 MP 3720CL, Mechanical Preventive Maintenance EDG Governor/Actuator Replacement, Revision 5
 MP 3720 CI, Diesel Fuel System and Component Repair, Revision 009-00
 SP 3646A.1-001, Emergency Diesel Generator A Operability Test, Revision 021
 SP 3646A.1-006, EDG A 24 Hour Run and Restart, Revision 001-03
 SP 3646A.20-001, Emergency Diesel Generator A Part Load Reject, Revision 005
 SP 3646A.10-001, Emergency Diesel Generator A Full Load Rejection Test, Revision 007-00
 SP 3646A.17-001, Train A ESF With LOP Test, Revision 020
 AOP 3552, Malfunction of the Rod Drive System, Revision 014
 SP3670.1-001, MODE1-4 Daily and Shiftly Control Room Rounds, Revision 039
 SP3602A.1-001, Rod Cluster Control Exercise, Revision 004-01
 MP 2719H, EDG Fuel Supply System Maintenance, Revision 004-03

Miscellaneous

ETE-MP-2016-1136, RBCCW Heat Exchanger Cleaning and Inspection Frequency and Allowable Tube Plugging, Revision 0
 RBCCW System Health Reports
 System Monitoring Plan Requirements, Millstone Power Station Unit 2, dated 8/31/2017
 DBS-2330A, Millstone Nuclear Power Station Unit 2, Design Bases Summary, Reactor Building Closed Cooling Water System, Revision 0
 MA-AA-103 – Attachment 2, Trouble Shooting Sheet for CR 1072779 under WO 53103097960, dated July 7, 2017
 Tagout Record Sheet SIL15-0600 for clearance, dated October 15, 2017
 Tagout Record Sheet SIL15-0500 for hanging, dated October 18, 2017
 Tagout Record Sheet SIL15-0305 for clearance, dated October 20, 2017
 Tagout Record Sheet SIL15-0304 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0303 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0302 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0301 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0101 for clearance, dated October 22, 2017
 Tagout Record Sheet SIL15-0100 for clearance, dated October 22, 2017
 25203-138-002, Installation, Operation and Maintenance of Emergency Diesel Engine, Coltec Industries

Drawings

25212-39001 SH15023, Process Control Block Diagram, Revision I
 25212-39001 SH15024, Process Control Block Diagram, Revision E
 25212-39001 SH6228, Rod Control, Revision F
 25212-39001 SH6231, Rod Speed Control, Revision C
 25212-26912 SH1, P&ID Low Pressure Safety Injection, Revision 50
 25212-26912 SH2, P&ID Low Pressure Safety Injection, Revision 23
 25212-26912 SH3, P&ID Low Pressure Safety Injection/Containment Recirculation, Revision 38

Corrective Action Records

CA 3024628	1020647	1042232	1056919
1070591	1079952	1079972	1080563
1085845			

Work Orders

5310305814	53102465019	53102465021	53102648064
53102664709	53102675543	53102675916	53102679264
53102685926	53102685927	53102685928	53102749863
53102843856	53102843931	53102932400	53102932467
53102932473	53102932821	53102933278	53102964525
53102990512	53103009646	53103012531	53103014574
53103032991	53103035652	53103035737	53103042824
53103043043	53103087663	53103100722	53103115780

Section 1R13: Maintenance Risk Assessments and Emergent Work ControlProcedures

SP 3673.2, Fire Transfer Switch Panel Operational Testing, Revision 3
 OP 3211, Solid Plant Pressure Control (ICCE), Revision 0
 OU-M3-201, Shutdown Safety Assessment Checklist, Revision 25
 OU-AA-200, Shutdown Risk Management, Revision 10
 WM-AA-100, Work Management, Revision 29
 Operational Decision Making Checklist associated with CR 1069552, 2-RC-404 and 'B' PORV
 NF-AA-PRA-370, Probable Risk Assessment Procedures and Methods: MRule (a)(4) Risk
 Monitor Guidance, Revision 16
 MP 2719H, EDG Fuel Supply System Maintenance, Revision 004-03

Work Orders

53102664709	53102791022
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Miscellaneous

Shutdown Safety Assessment dated 11/8/17 @ 03:00 and 12:00
 Shutdown Safety Assessment Millstone Unit 3 on 10/17/2017
 EOOS Version 4.1 for Millstone Unit 2 on 10/30/2017
 EOOS Version 4.1 for Millstone Unit 2 on 10/24/2017
 MP-26-EPA-REF02, Millstone Unit 2 Emergency Action Level Technical Basis Document,
 Revision 026
 98ENG02718C2, MP2 Auxiliary Building and Turbine Buildings, HELB Barrier Infiltration
 Analysis, Revision 00
 NFPA 80, Section 2-1.5 & Section 4.8.4.1
 VTM 25205-010-002, GE 4.160 kV Switch Gear Vendor Manual
 25203-39004, Electric Schematic, Sheet 35
 25203-39004, Electric Schematic, Sheet 32A
 Unit 2 operator logs 11/26/2017
 Calculation of ACT for 2C25 Closed PORV Block Valve
 Root Cause Evaluation RCE3048134, Repeat Leakage of the Target Rock PORVs, Revision 1
 High Risk Plan for B EDG and RSST outage dated October 25, 2017
 Tagout Record Sheet SIL15-0600 for clearance, dated October 15, 2017
 Tagout Record Sheet SIL15-0500 for hanging, dated October 18, 2017
 Tagout Record Sheet SIL15-0305 for clearance, dated October 20, 2017

Tagout Record Sheet SIL15-0304 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0303 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0302 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0301 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0101 for clearance, dated October 22, 2017
 Tagout Record Sheet SIL15-0100 for clearance, dated October 22, 2017
 25203-138-002, Installation, Operation and Maintenance of Emergency Diesel Engine, Coltec Industries

Condition Reports

1042232	1069552	1070591	1082515
1082596	1084750	1086025	

Drawings

25212-26912 SH1, P&ID Low Pressure Safety Injection, Revision 50
 25212-26912 SH2, P&ID Low Pressure Safety Injection, Revision 23
 25212-26912 SH3, P&ID Low Pressure Safety Injection/Containment Recirculation, Revision 38
 25203-39004, Electric Schematic, Sheet 35
 25203-39004, Electric Schematic, Sheet 32A

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

AOP 2503B, Loss of Non-Vital 480 VAC Bus 22B, Revision 003-06
 CM-AA-TCC-204, Temporary Configuration Changes, Revision 5
 ARP 2590C-074, CEDM MG Set 2 FDR BKR Trip, Revision 001
 SP 2401D, RPS Matrix Logic and Trip Path Relay Test, Revision 016-00
 WM-AA-100, Work Management, Revision 29
 CM-AA-12, Configuration Management Change Process, Revision 0
 SP 2604Z, ECCS, SDC and CS System Gas Accumulation Verification, Revision 006
 OP-AA-102, Operability Determination, Revision 15
 C CP 803.12-002, Gas Chromatograph Analysis Log, Revision 000
 OP 2310, Shutdown Cooling System Boron Equalization, Revision 011-01

Drawings:

25203-3001, Main Single Line Diagram, Revision 42
 25203-30007, Single Line Diagram 480V Unit Substation 22A(b1), 22B(B2), 22C(B3), and 22D(B4), Revision 32
 25203-39004, Electric Schematic, Sheet 35
 25203-39004, Electric Schematic, Sheet 32A
 25203-26015, PID Low Pressure Safety Injection System, Sheet 1, Revision 50

Condition Reports

1079996	1079996	1080926	1082515
1082596	1082936	1084893	1086025

Miscellaneous

Operator Logs, Unit 2, November 28, 2017
 Millstone Unit 2 Technical Specifications
 VTM 25205-010-002, GE 4.160 kV Switch Gear Vendor Manual

98ENG02718C2, MP2 Auxiliary Building and Turbine Buildings, HELB Barrier Infiltration Analysis, Revision 00
 NFPA 80, Section 2-1.5 & Section 4.8.4.1
 ETE-CME-2015-1004, Basis of GL 2008-01 ECCS, DHR & CS Gas Accumulation Surveillance Program, Revision 1
 M2-EV-08-0027, Technical Evaluation for Generic Letter 2008-01 Response Millstone Unit 2, Revision 0

Section 1R18: Plant Modifications

Procedures

MP 3720CL, Mechanical Preventive Maintenance EDG Governor/Actuator Replacement, Revision 5
 MP 3720 CI, Diesel Fuel System and Component Repair, Revision 009-00
 SP 3646A.1-001, Emergency Diesel Generator A Operability Test, Revision 021
 SP 3646A.1-006, EDG A 24 Hour Run and Restart, Revision 001-03
 SP 3646A.20-001, Emergency Diesel Generator A Part Load Reject, Revision 005
 SP 3646A.10-001, Emergency Diesel Generator A Full Load Rejection Test, Revision 007-00
 SP 3646A.17-001, Train A ESF With LOP Test, Revision 020
 C MP 715B, Installation of Concrete Anchors, Revision 008-00
 C MP 717A, Grout Installation, Revision 002-04
 SA-AA-106, Drilling, Digging, and Cutting, Revision 9
 Design Change MP3-14-01032, Permanent Accumulator Fill Skid from RWST, Revision 002
 ARP 2590D-096, HTR DRAIN TK LEVEL HI/LO, Revision 0
 AOP 2575, Rapid Downpower, Revision 009-00
 SPROC OPS17-2-001, Millstone Unit 2 Full Power Operation with Two Condensate Pumps Evaluation, Revision 000
 OP 2204, Load Changes, Revision 036 One Time Only
 CM-AA-TCC-204, Temporary Configuration Changes, Revision 5
 ARP 2590C-074, CEDM MG Set 2 FDR BKR Trip, Revision 001
 SP 2401D, RPS Matrix Logic and Trip Path Relay Test, Revision 016-00
 WM-AA-100, Work Management, Revision 29
 CM-AA-12, Configuration Management Change Process, Revision 0

Condition Reports

1076860	1076879	1079952	1079972
1079996	1080563	1085845	

Maintenance Orders/Work Orders

5310305814	53102465019	53102465021	53102648064
53102675543	53102675916	53102679264	53102685926
53102685927	53102685928	53102843856	53102843931
53102865660	53102932400	53102932467	53102932473
53102932821	53102933278	53103012531	53103014574
53103032991	53103035737	53103042824	53103043043
53103087663	53103100722	53103115780	

Section 1R19: Post-Maintenance Testing

Procedures

SP 3622.8, Auxiliary Feedwater Valve Operability Test, Revision 011

Surveillance Form SP 3622.08-009, Auxiliary Feedwater Train 'B' Valve Stroke Time Test
 Surveillance form SP 3622.8-001, Auxiliary Feedwater Train 'A' Valve Stroke Time Test
 MP 3762WA, Lonergan D, DB, and DO Series Relief Valves, Revision 007-00
 MP 3720CL, Mechanical Preventive Maintenance EDG Governor/Actuator Replacement,
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 MP 3720 CI, Diesel Fuel System and Component Repair, Revision 009-00
 SP 3646A.1-001, Emergency Diesel Generator A Operability Test, Revision 021
 SP 3646A.1-006, EDG A 24 Hour Run and Restart, Revision 001-03
 SP 3646A.20-001, Emergency Diesel Generator A Part Load Reject, Revision 005
 SP 3646A.10-001, Emergency Diesel Generator A Full Load Rejection Test, Revision 007-00
 SP 3646A.17-001, Train A ESF With LOP Test, Revision 020
 C MP 721AS, Installation of Swagelok Instrument Tube Compression Fittings, Revision 003
 MP 2720R9, EGS Grayboot Connectors (EQ), Revision 002
 EQR231C, Millstone Station Equipment Qualification Record, Revision 1
 EQR262C, Millstone Station Equipment Qualification Record, Revision 1
 SP 3621.1-001, Cold Shutdown Test of Feed Water Isolation Valves, Revision 007
 MP3-17-01013, Design Change for Inadequate Voltage for PORV 3RCS*PCV456, Revision 001
 C MP 715E1, Work Control Practices for Threaded Fasteners, Revision 002
 C MP 715E, General Practices for Flanges and Threaded Fasteners, Revision 005
 MS-AA-IEE-301 – Attachment 2 (10000035445), Item Equivalency Evaluation, Revision 01
 MS-AA-IEE-301, Item Equivalency Evaluation, Revision 10
 C MP 727A, Testing and Setting Pressure Relief Valves, Revision 005
 C MP 721AP, Installation of Parker CPI Instrument Tube Compression Fittings, Revision 000-05
 CM-AA-TCC-204, Temporary Configuration Changes, Revision 5
 ARP 2590C-074, CEDM MG Set 2 FDR BKR Trip, Revision 001
 SP 2401D, RPS Matrix Logic and Trip Path Relay Test, Revision 016-00
 WM-AA-100, Work Management, Revision 29
 CM-AA-12, Configuration Management Change Process, Revision 0

Condition Reports

1037325	1037464	1040769	1042232
1063561	1070591	1070892	1072463
1076461	1079952	1079972	1079996
1080563	1081498	1082364	1085845
1233985			

Maintenance Orders/Work Orders

53102465019	53102465021	53102648064	53102675543
53102675916	53102679264	53102685926	53102685927
53102685928	53102843856	53102843931	53102932400
53102932467	53102932473	53102932821	53102933278
53102954270	53102960586	53102960586	53102960705
53102960705	53102999496	53103012531	53103014574
53103028102	53103032991	53103035737	53103042824
53103043043	53103046721	53103052814	53103073055
53103084905	53103087663	53103097201	53103100722
53103115780	53103134695		

Drawings

25212-30272 SH23A, Test Loop Diagram Feed Water System Steam Generator (3RCS*SG1C)
 Feed Water Isolation Valve (3FWS*CTV41C), Revision 5

25212-30272 SH23B, Test Loop Diagram Feed Water System Steam Generator (3RCS*SG1C)
Feed Water Isolation Valve (3FWS*CTV41C), Revision 3

25212-30272 SH23C, Test Loop Diagram Feed Water System Steam Generator (3RCS*SG1C)
Feed Water Isolation Valve (3FWS*CTV41C), Revision 5

25212-26930 SH4, P&ID Feed Water System, Revision 28

25212-30088 SH1, 125V Miscellaneous DC one line diagram Battery #2 SH1, Revision 22

25212-26939, P&ID Nitrogen and Hydrogen Systems, Revision 4

25212-32001 SH 7JQ, Elem. Diag. [3FWS*CTV41C] SG Feed Water Isolation Valve, Revision 10

25212-31964 SH57, Wiring Diagram Wire Details Namco Connectors, Revision 4

25212-31964 SH71, Wiring Diagram Equipment With Litton-Veam/Namco/EGS Connectors, Revision 15

25212-29476 SH17, 22 inch Bore MFIV Valve Actuator General Arrangement, Revision 1

22RAH-A002, 22 inch Bore MFIV Valve Actuator General Arrangement, Revision 17

25212-29476 SH16, 22 inch Bore MFIV Valve Actuator General Arrangement, Revision 0

25212-29476 SH23, 22 inch Bore MFIV Valve Actuator General Arrangement, Revision 0

25212-29476 SH22, 22 inch Bore MFIV Valve Actuator General Arrangement, Revision 0

25212-29476 SH24, 22 inch Bore MFIV Valve Actuator General Arrangement, Revision 0

25212-28210 SH6, Logic Diagram Feed Water System, Revision 9

25212-31832A SH3, Wiring Diagram Transfer Switch Panel 3CES*PNLT SB, Revision 0

25212-31832 SH3, Wiring Diagram Transfer Switch Panel 3CES*PNLT SB, Revision 9

25212-31888-A SH0, Wir. Diag. Transfer SW. PNL. 3CES*PNLT SB, Revision 0

25212-31888 SH0, Wir. Diag. Transfer SW. PNL. 3CES*PNLT SB, Revision 7

25212-31953-A SH0, Wiring Diagram Elec Pen 3RCP*G3P & V, Revision 0

25212-31953 SH0, Wiring Diagram Elec Pen 3RCP*G3P & V, Revision 09

25212-32001 SH7DW1, Elementary Diagram PZR Power Relief Valve 3RCS*PCV456, Revision 04

25212-39241 SH58, Wiring Diagram Power Unit Emergency Diesel Generator A [3EGS*PNLCNTA/3EGS*PNL1A], Revision M

25212-26912 SH1, P&ID Low Pressure Safety Injection, Revision 50

25212-26912 SH2, P&ID Low Pressure Safety Injection, Revision 23

25212-26912 SH3, P&ID Low Pressure Safety Injection/Containment Recirculation, Revision 38

Miscellaneous

Tagout Record Sheet SIL15-0600 for clearance, dated October 15, 2017

Tagout Record Sheet SIL15-0500 for hanging, dated October 18, 2017

Tagout Record Sheet SIL15-0305 for clearance, dated October 20, 2017

Tagout Record Sheet SIL15-0304 for hanging, dated October 22, 2017

Tagout Record Sheet SIL15-0303 for hanging, dated October 21, 2017

Tagout Record Sheet SIL15-0302 for hanging, dated October 21, 2017

Tagout Record Sheet SIL15-0301 for hanging, dated October 22, 2017

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Section 1R20: Refueling and Other Outage Activities

Procedures

SP 31008, Low Power Physics Testing (ICCE), Revision 10

OP-AA-200, Equipment Clearance, Revision 28

OP 3204, At Power Operation, Revision 031

OP 3206, Plant Shutdown, Revision 017

OP 3208, Plant Cooldown, Revisions 027, 028, and 30
 OP-AA-106, Infrequently Conducted or Complex Evolutions, Revision 10
 LI-AA-700, Fatigue Management and Work Hour Limits for Covered Workers, Revision 13
 MP-13-RE-GDL02, Guidelines for Performing Core Mapping, Revision 008
 OP 3201, Plant Heatup, Revision 030
 OP 3202, Reactor Startup (ICCE), Revision 023
 OP 3203, Plant Startup, Revision 024
 OP 3205, Shutdown Plant Manipulations, Revision 001
 SP 31008 Attachment 8, Physics Testing Results Evaluation Criteria, Revision 10
 SP 31008 Attachment 7, Moderator Temperature Coefficient Surveillance, Revision 10
 SP 31008 Attachment 13, Shutdown Margin Verification, Revision 10
 ER-AA-RXE-1004 – Attachment 4, Reactivity Plan for Shutdown of U3 for 3R18, Dated October 12, 2017
 OP 3210C, Refueling Restoration, Revision 018
 OP 3216, Reactor Coolant System Drain (ICCE), Revision 015
 WM-AA-301, Operational Risk Assessment, Revision 17
 OP 3202-002, Technical Specification Review Prior to Mode 1 Entry Checkoff List 6.2, Revision 002-03
 SP 31008 Attachment 16, Technical Specification Review Prior to Mode 2 Entry, Revision 010
 OP 3201 Attachment 6, Mode 3 Change Checklist, Revision 030
 OP 3201 Attachment 5, Mode 4 Change Checklist, Revision 030
 OP 3204, At Power Operation, Revision 032
 OP-AA-100, Conduct of Operations, Revision 33

Work Orders

53102476152

Condition Reports

1034213	1035061	1035230	1080803
1080842	1080912	1081970	1083594
1083712	1083722	1083723	1083724
1083725	1083726	1083727	1083729
1083730	1083731	1083732	1083734
1083735	1083738	1083739	1083740
1083744	1083745	1083746	1083748
1083749	1083753	1083754	1083755
1083756	1083757	1083761	1083767
1083768	1083775	1083776	1083780
1083829	1083830	1083831	1083832
1083837	1083838	1083840	1083841
1084127	1084149	1084149	1084178
1084183	1084356		

Miscellaneous

Dominion Personnel Outage Work Schedules for Operations and Maintenance
 Mode 2 Change Checklist (Unit 3 - Attachment 17 of SP 31008)
 3 Discs of Video for Core Verification, dated November 02, 2017
 Memorandum, Pre-3R18 Shutdown Risk Schedule, Date October 9, 2017
 Northeast Utilities Letter, Millstone Nuclear Power Station, Units 2 and 3 Loss of Decay Heat Removal Generic Letter 88-17, Dated December 23, 1988

Northeast Utilities Letter, Millstone Nuclear Power Station, Units 2 and 3 Loss of Decay Heat Removal Generic Letter 88-17, Dated January 31, 1989
 Northeast Utilities Letter, Millstone Nuclear Power Station, Unit 3 Generic Letter 88-17, Revised Response to Expeditious Action Item 4, Dated April 4, 1990
 Northeast Utilities Letter, Millstone Nuclear Power Station, Unit 3 Generic Letter 88-17 - Revised Response - Expeditious Action Item 4, Dated April 28, 1995
 RSST Electrical Lineup Sheet dated October 26, 2017
 RSST Transformer A (N2 System) Line Up Sheet dated October 26, 2017
 RSST Transformer A (Oil System) Line Up Sheet dated October 26, 2017
 RCS05-0001, Tagout Record Sheet dated October 16, 2017
 CWS23-0400, Tagout Record Sheet E & F Waterbox dated October 17, 2017
 VBA03-0100, Tagout Record Sheet Invertor 3 dated October 18, 2017
 ETE-MP-2017-1165, Evaluation of Pitting on M33RCS*REV2, the MP3 Reactor Vessel Head, Revision 1
 ETE-MP-2017-1157, MP3 Reactor Coolant System Structural Integrity Evaluation Following October 13, 2017 Overpressurization Event, Revision 0
 Millstone Power Station Unit 3 30-Day Special Report for an RCS Pressure Transient, dated November 7, 2017 (ML17319A089)
 Operations Log Entries from 10/12/2017 to 10/14/2017
 Root Cause Evaluation RCE3067824, RCS Pressure Transient While Isolating IAS to CCP Heat Exchangers
 Prompt Issue Review Team Report (CR 1080842), RCS Pressure Spike due to 3CHS*FCV-121 Opening while Isolating IAS to CCP Heat Exchangers, dated 10/14/2017

Section 1R22: Surveillance Testing

Procedures

SP 3614I.1, Supplementary Leak Collection and Release System Operability Test, Revision 011-07
 SP 3614I.1-001, Supplementary Leak Collection and Release System Operability Test Train A, Rev. 012-02
 OP-AA-106, Infrequently Conducted or Complex Evolutions, Revision 10
 SP-3646A.15, Train A Loss of Power Test (ICCE), Revision 21
 SP 3646A.17, Train A ESF With LOP Test (ICCE), Revision 021
 SP 3646A.17-001, Surveillance Form Train A ESF With LOP Test, Revision 020
 SP 3673.2, Fire Transfer Switch Panel Operational Testing, Revision 3
 SP 2401FB, reactor protection system (RPS) channel "B" high power trip test, Rev. 004-09
 MP 3720CL, Mechanical Preventive Maintenance EDG Governor/Actuator Replacement, Revision 5
 MP 3720 CI, Diesel Fuel System and Component Repair, Revision 009-00
 SP 3646A.1-001, Emergency Diesel Generator A Operability Test, Revision 021
 SP 3646A.1-006, EDG A 24 Hour Run and Restart, Revision 001-03
 SP 3646A.20-001, Emergency Diesel Generator A Part Load Reject, Revision 005
 SP 3646A.10-001, Emergency Diesel Generator A Full Load Rejection Test, Revision 007-00
 SP 3646A.17-001, Train A ESF With LOP Test, Revision 020
 SP 3608.6-008, Cold Shutdown Testing of 3SIH*MV8801A and 3SIH*8801B, Revision 001
 SP 3608.6-016, Refueling Full Stroke Testing of SIH Header Check Valves, Cold Leg Injection Flowpath, Revision 000
 SP 3608.6, Safety Injection System Valve Operability Test, Revision 015-02
 SP 3608.6-017, Refueling Full Stroke Testing of SIH Header Check Valves, A Pump – Hot Leg Injection Flowpath, Revision 000

SP 3608.2-005, Safety Injection Pump B Biennial IST Comprehensive Pump Test, Revision 000-02
 SP 3604A.1-001, 3CHS*P3A Biennial IST Comprehensive Pump Test, Revision 000-02
 SP 3608.1-005, Safety Injection Pump A Biennial IST Comprehensive Pump Test, Revision 000-02
 SP 3608.6-018, Refueling Full Stroke Testing of SIH Header Check Valves, B Pump – Hot Leg Injection Flowpath, Revision 000
 SP 3608.2, Safety Injection Pump B Operational Readiness Test, Revision 010-04
 SP 3604A.4, Charging Pump and Check Valve High Flow Testing with Reactor Head Removed, Revision 002
 SP 3608.1, Safety Injection Pump A Operational Readiness Test, Revision 011-05
 SP 3604A.4-004, CVCS Check Valve Full Stroke Surveillance in Mode 6 or 0, Revision 000
 SP 3604A.4-002, 3CHS*P3B Biennial IST Comprehensive Pump Test, Revision 000-01
 SP 3604A.4-003, 3CHS*P3C Biennial IST Comprehensive Pump Test, Revision 000-02
 OP 3304A, Charging and Letdown, Revision 037
 SP 3622.2-002, Auxiliary Feedwater Pump 3FWA*P1B IST Comprehensive Pump Test, Revision 006-01
 SP 3622.1-002, Auxiliary Feedwater Pump 3FWA*P1A IST Comprehensive Pump Test, Revision 006-01
 SP 3612B.3-001, Type B LLRT, Revision 016
 SP 3610A.1-008, 3RHS*P1A Biennial IST Comprehensive Pump Test and Check Valves 3RHS*V1 and 3SIL*V3 Full Flow Test, Revision 000-01
 SP 3610A.3-005, RHR System Gas Accumulation Verification – Train A, Revision 001
 SP 3712G, Main Steam Code Safety Valve Surveillance Testing, Revision 012
 SP 3712G-001, Main Steam Code Safety Valve Surveillance Testing Data Sheet, Revision 009-04
 SP 3612B.4, Type C LLRT – Penetration No. 26(i) [3CHS*V58], Revision 005
 SP 2604Z, ECCS, SDC and CS System Gas Accumulation Verification, Revision 006
 SP 2604Z-001, Gas Accumulation Verification, Facility 1 and Common Header, Revision 002
 OP-AA-102, Operability Determination, Revision 15
 C CP 803.12-002, Gas Chromatograph Analysis Log, Revision 000
 OP 2310, Shutdown Cooling System Boron Equalization, Revision 011-01

Condition Reports

1042232	1070591	1079952	1079972
1080563	1080595	1081582	1082596
1083288	1085845		

Work Orders

53102465019	53102465021	53102648064	53102675543
53102675916	53102679264	53102685926	53102685927
53102685928	53102791022	53102843856	53102843931
53102932400	53102932467	53102932473	53102932821
53102933278	53102936795	53103012531	53103014574
53103032991	53103035737	53103042824	53103043043
53103052814	53103083323	53103087663	53103100722
53103115780	53103130348		

Miscellaneous

Emergency Diesel Generator Timing Report
 Tagout Record Sheet SIL15-0600 for clearance, dated October 15, 2017

Tagout Record Sheet SIL15-0500 for hanging, dated October 18, 2017
 Tagout Record Sheet SIL15-0305 for clearance, dated October 20, 2017
 Tagout Record Sheet SIL15-0304 for hanging, dated October 22, 2017
 Tagout Record Sheet SIL15-0303 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0302 for hanging, dated October 21, 2017
 Tagout Record Sheet SIL15-0301 for hanging, dated October 22, 2017
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 ML110540393
 ML092960560
 ETE-CME-2015-1004, Basis of GL 2008-01 ECCS, DHR & CS Gas Accumulation Surveillance Program, Revision 1
 M2-EV-08-0027, Technical Evaluation for Generic Letter 2008-01 Response Millstone Unit 2, Revision 0

Drawings

25212-26912 SH1, P&ID Low Pressure Safety Injection, Revision 50
 25212-26912 SH2, P&ID Low Pressure Safety Injection, Revision 23
 25212-26912 SH3, P&ID Low Pressure Safety Injection/Containment Recirculation, Revision 38
 25203-26015, PID Low Pressure Safety Injection System, Sheet 1, Revision 50

Section 1EP4: Emergency Action Level and Emergency Plan Changes

MP-26-EPI-EPMP, Millstone Power Station Emergency Plan, Revision 55

Section 2RS1: Access Control to Radiologically Significant Areas

Procedures

RP-AA-105, External Radiation Exposure Control Program, Revision 2
 RP-AA-201, Access Controls for High and Very High Radiation Areas, Revision 8
 RP-AA-243, Portable HEPA Ventilation Units, Revision 3
 RP-AA-244, Vacuum Cleaner Use and Control, Revision 2
 RP-AA-274, Radiation Work Permits, Revision 6
 RP-AA-275, Radiological Risk Assessment Process, Revision 3
 RPM 2.5.2, Guidelines for Spent Fuel Pool or Flooded Reactor Cavity Work, Revision 004-01
 RPM 2.5.8, Multi-Badging for Special Work, Revision 007
 OP 3216, Reactor Coolant System Drain (ICCE), Revision 014

Condition Reports

CA3057893	1064205	1070946	1071444
1071861	1073959	1080306	1080710
1080881	1081013	1081274	1081275
1081407	1081428	1081598	1081800
1082771	1082817		

Miscellaneous

Air Activity Logs, 11/7/17 to 11/8/17, 10/14/17 to 10/15/17, 11/7/17
 Air Sample 3635, 3636, 3641, 3648, 3656, 3665, 4439, 4440, 4417
 ALARA Committee Meeting Agenda, 11/7/17
 ALARA Committee Meeting Minutes, 9/19/17
 ALARA Plan AP-3-18-01
 Alarm Report, ED Alarms 4/1/17 through 9/30/17

D-17-01334, Electronic Dosimeter Dose/Dose Rate Alarm Report, Revision 7
 D-17-01340, Electronic Dosimeter Dose/Dose Rate Alarm Report, Revision 7
 D-17-01342, Electronic Dosimeter Dose/Dose Rate Alarm Report, Revision 7
 D-17-01349, Electronic Dosimeter Dose/Dose Rate Alarm Report, Revision 7
 D-17-01364, Electronic Dosimeter Dose/Dose Rate Alarm Report, Revision 7
 D-17-01367, Electronic Dosimeter Dose/Dose Rate Alarm Report, Revision 7
 Briefing Attendance Roster dated 10/17/17, RWP 301 Task 4
 Briefing Attendance Roster dated 10/17/17 to 10/18/17, RWP 305 Task 1
 Briefing Attendance Roster dated 10/23/17, RWP 201 Task 2
 High Radiation Area Audit – Outage, dated 11/3/2017
 Locked High Radiation Area Key Log, dated 11/3/17 to 11/4/2017
 MP-HPO-16024 dated 5/4/2016
 Personal Internal Dosimeter Records for RWP 301 Task 2
 Radiation Work Permit 3170301, Revisions 0, 1, and 2
 Radiation Work Permit 3170382
 Radiation Work Permit 3170392
 Radiation Survey Figure No. 46A dated 11/7/17 at 1645
 Radiation Survey Figure No. 48C dated 11/7/17 at 1000
 Radiation Survey Figure No. 48C dated 11/8/17 at 1330
 Radiation Survey Figure No. 49 dated 10/13/17 at 2300
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 Radiological Risk Plan, “VHRA Entry – Health Physics under Reactor Vessel Survey,” dated 10/24/17
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 Standing Order SO-25 issued 9/2/15
 Whole Body Count Log, 1/4/17 to 11/2/17

Section 40A1: Performance Indicator Verification

Miscellaneous

2Q2017 Derivation and Margin Reports for Millstone Unit 2 Mitigating System Performance
 Index Performance Indicator Emergency AC, High Pressure Injection, Heat Removal,
 Residual Heat Removal, and Cooling Water System Inputs
 2Q2017 Derivation and Margin Reports for Millstone Unit 3 Mitigating System Performance
 Index Performance Indicator Emergency AC, High Pressure Injection, Heat Removal,
 Residual Heat Removal, and Cooling Water System Inputs
 3Q2017 Derivation and Margin Reports for Millstone Unit 2 Mitigating System Performance
 Index Performance Indicator Emergency AC, High Pressure Injection, Heat Removal,
 Residual Heat Removal, and Cooling Water System Inputs
 3Q2017 Derivation and Margin Reports for Millstone Unit 3 Mitigating System Performance
 Index Performance Indicator Emergency AC, High Pressure Injection, Heat Removal,
 Residual Heat Removal, and Cooling Water System Inputs
 MPS2 LER 2016-001-00, Turbine Driven Auxiliary Feedwater Pump Room HELB Door Left
 Open
 MPS3 LER 2017-001-00, Loss of Safety Function - Secondary Containment. NRC event #
 EN52501.
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 System

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Section 40A2 Problem Identification and Resolution

Procedures

C OP 200.11, Operation of a Cross Contaminated System, Revisions 004-00, 005-00, and 006-00

PI-AA-100-1003, Self Evaluation and Trending, Revision 23.

PI-AA-200, Corrective Action, Revision 33

SP-M3-ME-024, Conventions for System Identification, System Interfaces, and Equipment Identification, Revision 0

Condition Reports

CA243838

388015	388404	418653	420123
422564	422570	433981	434291
442919	487291	493668	0500285
1045292	1045414	1046621	1048909
1052162	1052762	1052791	1056066
1058241	1058681	1073556	1074319
1079726	1083716		

Miscellaneous

Drawing 12179-EM-126C

Drawing 12179-EM-128A

Drawing 12179-EM-128B

Drawing 12179-EM-147C

Graph, MP3 Condensate Surge Tank Tritium, Showing Data from 4/1/2012 to Present.

Log, Ion Chromatograph, Unit 3, "SG ETA" and "Li/NH4," 11/25/2016

Log Entry, Unit-3 Chemistry, dated 11/3/2017 at 0344

Meeting Minutes, Millstone Plant Health Working Group, dated 7/17/2017

MP-HPO-14038, "Evaluation of Potential Radiological Hazards for Non-RCA Work," dated 8/28/2014

MP-HPO-16062, "NRC Request for Information – Unit 3 Chemistry Laboratory Tritium Contamination," dated 12/21/2016

Request for Engineering Assistance, System 3319B, MP-REA-203, dated 7/22/2010

Request for Engineering Assistance, System 3319B CNS Header (no tracking number assigned), dated 6/29/2017

RER-02-007, "Tritium Contamination in Main Steam and Condensate/Feed Water Systems of Millstone Units 2 and 3," Revision 0, 1, and 2

Tritium Analysis Log, Unit-3, 9/27/2016 to 11/23/2016

Apparent Cause Evaluation – CR 1058241

Work Orders

53102451530	53102786216	53102999486	53103019850
53103043050	53103065851	53M30500839	53M30515169

Corrective Action Documents

427354	434739	434741	562108
562524	562626	562771	563717
563787	564011	564100	564394
564574	564688	565714	565716
573351	573354	1002717	1012417
1012843	1012929	1012974	1013049
1014167	1014841	1022149	1034465
1034543	1034552	1035168	1035231
1035249	1035303	1035327	1035455
1045412	1065345	1066417	1066752
1067010	1075814	1085107 *	1085108 *

REA-MP-2013-1077

REA-MP-2016-0088

(*) CRs initiated as a result of this inspection

Calculations

89-078-01713M2, MP2 Target Thrust Torque Calculation for 3SIL*MV8804A, 3SIL*MV8804B, Revision 9

89-078-00890ES, LPSI Header Isolation Valves 2-S-615, 625, 635, and 645, Revision 4

89-094-00900ES, MP3 Target Thrust/Torque Calculation for 3SIH*MV8801A, 3SIH*MV8801B, Revision 11

89-094-01000ES, MP3 Target Thrust/Torque Calculation for 3RHS*MV8701B, 3RHS*MV8702A, Revision 7

89-094-01007ES, MP3 Target Thrust/Torque Calculation for 3SIH*MV8801A, 3SIH*MV8801B, Revision 11

SIH-MOV-1388-M3, SIH System Functional Design Basis Review for Motor Operated Valves 3SIH*MV-8801A/B, 8802A/B, 8806, 8807A/B, 8813, 8814, 8821A/B, 8835, 8920, 8923A/B, and 8924, Revision 0,

Drawings

25203-26014, U-2 Piping and Instrumentation Diagram Reactor Coolant System, Sheet 1, Revision 41

25203-26015, U-2 Piping and Instrumentation Diagram L.P Safety Injection, Sheet 1, Revision 50

25203-26015, U-2 Piping and Instrumentation Diagram L.P Safety Injection, Sheet 2, Revision 48

25203-26015, U-2Piping and Instrumentation Diagram Safety Injection Tanks, Sheet 3, Revision 31

25212-26912, U-3 Piping and Instrumentation Diagram Low Pressure Safety Injection, Sheet 1, Revision 50

25212-26902, U-3 Piping and Instrumentation Diagram Reactor Coolant System, Sheet 1, Revision 34

25212-26902, U-3 Piping and Instrumentation Diagram Reactor Coolant System, Sheet 2, Revision 27

25212-26902, U-3 Piping and Instrumentation Diagram Reactor Coolant System, Sheet 4, Revision 23

25212-26902, U-3 Piping and Instrumentation Diagram Reactor Coolant System, Sheet 5, Revision 27

25212-26912, U-3 Piping and Instrumentation Diagram Low Pressure Safety Injection, Sheet 2, Revision 23

25212-26912, U-3 Piping and Instrumentation Diagram Low Pressure Safety Injection, Sheet 3,
Revision 38
25212-26913, U-3 Piping and Instrumentation Diagram High Pressure Safety Injection, Sheet 1,
Revision 13
25212-26913, U-3 Piping and Instrumentation Diagram High Pressure Safety Injection, Sheet 2,
Revision 42

Miscellaneous

2017-2Q Motor Operated Valves System Health Report

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

Condition Reports

1049282	1058241	1080403	1083716
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Work Orders

53103043050	53103065851
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Miscellaneous

Apparent Cause Evaluation – CR 1058241

MP-26-EPI-FAP07-001, Incident Response Form IRF 20170024, dated October 09, 2017

MP-26-EPI-FAP07-001, Incident Response Form IRF 20170023, dated October 09, 2017

U3 eSOMS log entries for 0600 October 09, 2017 to 0600 October 10, 2017

Drawings

25212-26942 SH1, P&ID Turbine Generator Support Systems, Revision 33

LIST OF ACRONYMS

ASME	American Society of Mechanical Engineers
BMV	bare metal visual
BPV	boiler and pressure vessel
CAP	corrective action program
CFR	<i>Code of Federal Regulations</i>
CNS	condensate drawdown and makeup system
CR	condition report
EAL	emergency action level
ECCS	emergency core cooling system
ECT	eddy current testing
EDG	emergency diesel generator
HPSI	high pressure safety injection
HRA	high radiation area
IMC	Inspection Manual Chapter
JPM	job performance measure
kV	kilovolt
LER	licensee event report
LPSI	low pressure safety injection
MOV	motor operated valve
NCV	non-cited violation
NDE	non-destructive examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PI	performance indicator
PORV	power operated relief valve
RCS	reactor coolant system
RPS	reactor protection system
RSST	reserve station service transformer
SG	steam generator
SLCRS	supplementary leak collection and release system
SSC	structure, system, and component
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic testing
VHRA	very high radiation area