

January 27, 2003

Mr. J. Alan Price, Site Vice President - Millstone  
c/o Mr. D. W. Dodson, Acting Manager - Licensing  
Dominion Nuclear Connecticut, Inc.  
Rope Ferry Road  
Waterford, Connecticut 06385

SUBJECT: MILLSTONE POWER STATION UNIT 2 AND UNIT 3 - NRC INSPECTION  
REPORTS 50-336/02-06 AND 50-423/02-06

Dear Mr. Price:

On December 28, 2002, the NRC completed inspections at your Millstone Unit 2 and Unit 3 reactor facilities. The enclosed reports document the inspection findings which were discussed on January 27, 2003 with you and members of your staff.

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

Based on the results of these inspections, the inspectors identified one Unit 2 issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of these inspection reports, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Millstone facility.

Since the terrorist attacks on September 11, 2001, the NRC has issued two Orders (dated February 25, 2002, and January 7, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002, that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the February 25th Order. Phase 1 of TI 2515/148 was completed at all commercial nuclear power plants during calendar year (CY) '02, and the remaining inspections are scheduled for completion in CY '03. Additionally, table-top security drills were conducted at several licensees to evaluate the impact of expanded adversary characteristics and the ICMs on licensee

protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Security and Incident Response. For CY '03, the NRC will continue to monitor overall safeguards and security controls, conduct inspections, and resume force-on-force exercises at selected power plants. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to ensure adequate safety is being maintained at all commercial power reactors.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>

Sincerely,

*/RA/*

Brian J. McDermott, Chief  
Projects Branch 6  
Division of Reactor Projects

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

Enclosures:

- (1) NRC Inspection Report 50-336/02-06  
Attachment 1: Supplemental Information
- (2) NRC Inspection Report 50-423/02-06  
Attachment 1: Supplemental Information

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Mr. J. Alan Price

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**ENCLOSURE 1**

**U.S. NUCLEAR REGULATORY COMMISSION  
REGION I**

Docket No.: 50-336

License No.: DPR-65

Report No.: 50-336/02-06

Licensee: Dominion Nuclear Connecticut, Inc.

Facility: Millstone Power Station, Unit 2

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

Dates: September 29, 2002 - December 28, 2002

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Approved by: Brian J. McDermott, Chief  
Projects Branch 6  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000336-02-06; Dominion Nuclear Connecticut, Inc.; on 09/29-12/28/02; Millstone Power Station; Unit 2. Maintenance Rule Implementation.

The inspection was conducted by resident and regional inspectors. The inspection identified one Green issue, which was a Non-Cited Violation. The significance of most findings is indicated by the color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspector Identified Findings

#### **Cornerstone: Mitigating Systems**

- **Green.** The inspectors identified a violation of 10 CFR 50, Appendix B, Criterion XVI, for failure to determine the cause and take corrective action to preclude repetition of the "A" emergency diesel generator (EDG) room ventilation exhaust damper solenoid valve failure. Following an "A" emergency diesel generator (EDG) ventilation system solenoid valve failure in May 2000, the identified condition was not adequately investigated and the root cause never fully determined to prevent recurrence of a similar failure in August 2002. The failure of the "A" EDG's ventilation exhaust damper rendered the EDG incapable of performing its required safety function. This finding regarding the failure to identify and prevent recurrence of a significant condition adverse to quality, is related to the licensee's Problem Identification and Resolution process.

The finding impacted the Mitigating Systems cornerstone and affected the availability of the "A" EDG. The inspectors evaluated the significance of this finding using the SDP Phase 1 worksheets and the SDP Phase 2 risk-informed inspection notebook (Revision 1) for Millstone Unit 2. Based on the results of the SDP Phase 2 evaluation, an SDP Phase 3 evaluation was performed. The SDP Phase 3 evaluation concluded that the finding was of very low safety significance (Green) following application of refined operator recovery credit. The increase in core damage frequency was greater than  $1.0E-7$ , but less than  $1.0E-6$  due to internal initiating events. Because the finding is of very low safety significance and it was captured in the licensee's corrective action program, this finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. (Section 1R12.1)

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## Report Details

### SUMMARY OF UNIT 2 STATUS

The Unit operated at essentially 100% power for the duration of the inspection period.

#### **1. REACTOR SAFETY**

##### **Initiating Events, Mitigating Systems, and Barrier Integrity [REACTOR - R]**

###### 1R01 Adverse Weather Protection

###### a. Inspection Scope

The inspectors reviewed Dominion's preparations for adverse weather, relative to the protection of safety-related systems, structures, and components (SSCs) from low temperatures. This review included a walkdown of general exterior yard areas, the Unit 2 refueling water storage tank (RWST), and two RWST vaults. Selected equipment and components located in areas exposed to outside weather were inspected to ensure that the equipment was adequately protected from the indicated extreme conditions. In addition, the inspectors verified that surveillance testing of the RWST temperature monitoring instrumentation considered the weather extremes to which it was subjected, was performed at the specified frequency and included actions to address identified deficiencies. The following were reviewed to support this inspection:

- OP 2268, Revision 002, Cold Weather Preparation and Operation
- RWST Cold Weather Preparation Instrument Calibration Data Sheet IC2429D3

###### b. Findings

No findings of significance were identified.

###### 1R04 Equipment Alignment

###### .1 Partial Equipment Alignment

###### a. Inspection Scope

The inspectors performed partial system walkdowns on the following systems:

- Containment Spray System following system pump and valve testing
- "B" Refueling Water Storage Tank suction supply to Facility 2 Safety Injection and Containment Spray Pumps during maintenance on the Facility 1 Safety Injection and Containment Spray Systems
- "A" High Pressure Safety Injection during "B" and "C" High Pressure Safety Injection operational and in-service testing
- "C" Charging Pump during in-service testing of the "A" and "B" Charging Pumps and Discharge Check Valves

The inspectors evaluated system and component alignment to identify any discrepancies that would impact system operability. The inspectors reviewed selected valve positions, electrical power availability and the general condition of major system components. The inspectors reviewed the following related licensee documents:

- Refer to Attachment 1 for list of reviewed partial equipment alignment documents

b. Findings

No findings of significance were identified.

.2 Complete Equipment Alignment

a. Inspection Scope

The inspectors performed a full system alignment review on the service water system (SWS). The review included (1) a walkdown of the system to verify the SWS was correctly aligned for operation, (2) an assessment of system health and current operability based on a review of various condition reports, and (3) verification that the system is operating within the bounds of the current licensing and design basis. The inspectors reviewed the following documents:

- Refer to Attachment 1 for specific condition reports reviewed
- SP 2612C, Revision 007-06, "Service Water System Lineup and Valve Tests, Facility 1"
- OPS Form 2612C-001, Revision 030-05, "Service Water Valve Operability, Facility 1"
- SP 2612D, Revision 008-08, "Service Water System Lineup and Valve Tests, Facility 2"
- OPS Form 2612D-001, Revision 028-04, "Service Water Valve Operability, Facility 2"
- Piping & Instrument Diagram 25203-26008, Sheet 1, Circulating Water
- Piping & Instrument Diagram 25203-26008, Sheet 2, Service Water
- Piping & Instrument Diagram 25203-26008, Sheet 3, Service Water to Vital AC Switchgear Cooling and AC Chiller
- FSAR Chapter 9.7.2, Service Water System
- Memorandum NL-92-573 dated August 19, 1992, Service Water System Limited Current Licensing Basis - Millstone 2

b. Findings

No findings of significance were identified.

## 1R05 Fire Protection

### .1 Routine Plant Area Inspections

#### a. Inspection Scope

The inspectors reviewed the licensee's fire protection program to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for selected areas. The inspectors walked down those areas to assess the licensee's control of transient combustible material and ignition sources. In addition, the inspectors evaluated the material condition and operational status of fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The areas reviewed included:

- Z2 Switchgear Room - Turbine Building, 56'-6" Elevation (Fire Area T-10)
- Main Control Room - Auxiliary Building, 36'-6" Elevation (Fire Area A-25)
- Old Computer Room adjacent to Main Control Room - Auxiliary Building, -38'-6" Elevation (Fire Area A-26)
- Ventilation Equipment Room for Main Control Room - Auxiliary Building, 38'-6" Elevation (Fire Area A-33)
- West Battery Room - Auxiliary Building, 14'-6" Elevation (Fire Area A-23)
- Diesel Day Tank Room A - Auxiliary Building, 38' 6" Elevation (Fire Area A-31)
- Diesel Day Tank Room B - Auxiliary Building, 38' 6" Elevation (Fire Area A-30)
- Enclosure Building Filtration System Room - Auxiliary Building, 14' 6" Elevation (Fire Area A-14D)
- Turbine Lube Oil Room - Turbine Building, 14'-6" Elevation (Fire Area T-2)
- Turbine Building Operating Floor/Turbine Deck - Turbine Building, 54'-6" Elevation (Fire Area T-1F)

The inspectors reviewed the following related documents:

- Refer to Attachment 1 for list of reviewed fire protection evaluations
- WC 7, Revision 003-03, Attachment 7, "Control of Combustible and Flammable Material", Section 1.2
- Fire Hazards Analysis
- Fire Hazards Analysis Boundary Drawings
- Unit 2 Combustible Loading Calculations
- Fire Fighting Strategies
- Condition Report 02-12371, NRC Noted Discrepancies in Various Fire Protection Evaluations

#### b. Findings

No findings of significance were identified.

## 1R06 Flood Protection Measures

### a. Inspection Scope

The inspectors reviewed the station's internal flood analysis, flood mitigation procedures, and design features, to verify they were consistent with design requirements and industry standards. The inspectors walked down selected risk significant plant areas to verify that room flood detectors, watertight doors, sump pumps, and other flood protection design features were adequate and operable. During the walk downs, the inspectors also verified whether there were any unidentified or unanalyzed sources of flooding, including holes and unsealed penetration in floors and walls, between flood areas, and between common drain system and sump flood areas. The specific areas included:

- Motor Driven AFW Pump Room - Turbine Building (Elevation 1'-6")
- "B" Safeguards Room - Auxiliary Building (Elevation -45'-6")

The inspectors reviewed the station's preventive maintenance tasks and surveillance tests for room flood detectors, flood barriers, and watertight doors to evaluate whether component functionality was routinely verified. In addition, the station's corrective action program was reviewed, including material history. The inspectors conducted interviews of selected system and design engineers to verify whether previous flood related issues had been appropriately identified, evaluated and resolved. Procedures and documents reviewed included:

- Calculation No. 98-ENG-02411-C2, Revision 01, MP2 Evaluation of Flooding Outside Containment
- Calculation W2-517-1070-RE, Revision 0, Section 3.4, Zone C Motor Driven AFW Pump Room (Elevation 1'-6"), MP2 Internal Flooding Evaluation
- DCR No. M2-98096, "ESF Room Sump High Water Level Alarm Switch Upgrade"
- EOP 2532, Revision 21, "Loss of Coolant Accident"
- EOP 2541, Revision 2, "Standard Appendices"
- ARP 2590E, Revision 008-06, "Alarm Response for Control Room Panels"
- DM2 00-0307-01, "Replace Safety Injection Sump Pumps P35A and P36A"
- DWG No. 25203-24024, "MP2 Piping & Instrumentation Diagram Containment Building Drains"

### b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Licensed Operator Requalification Program Review

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, Rev. 8, "Operator Licensing Examination Standards for Power Reactors," Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program," and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)," as acceptance criteria. These inspection activities were performed for both units.

The inspectors reviewed documentation of operating history since the last requalification program inspection. Documents reviewed included NRC inspection reports and licensee deficiency reports. The inspectors also discussed facility operating events with the resident staff. The inspectors did not detect operational events that were indicative of possible training deficiencies.

Inspectors reviewed examples of the comprehensive written exams and observed the administration of annual operating tests. The quality of the written exams and the annual operating tests met or exceeded the criteria of the Examination Standards and 10 CFR 55.59, Requalification.

The inspectors observed simulator performance during the conduct of the examinations, reviewed simulator performance tests (e.g., steady state performance tests, selected transient tests, and licensed operator requalification program scenario-based tests), and discrepancy reports to verify compliance with the requirements of 10 CFR 55.46, Simulation Facilities.

The inspectors reviewed a sample of operators' records related to requalification training attendance, license reactivations, and medical examinations and confirmed the operators were in compliance with license conditions and NRC regulations.

Instructors, training/operations management personnel, and a sample of individual licensed operators were interviewed for feedback regarding the implementation of the licensed operator requalification program.

On December 9, 2002, the inspectors conducted an in-office review of licensee requalification exam results. These results included the annual operating test and comprehensive written exam. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The inspectors verified that:

- Crew pass rate was greater than 80%. (Unit 2 pass rate was 90%; Unit 3 was 100%.)
- Individual pass rate on the dynamic simulator test was greater than or equal to 80%. (Unit 2 pass rate was 100%; Unit 3 was 100%.)

- Individual pass rate on the walk-through test was greater than or equal to 80%. (Unit 2 pass rate was 100%; Unit 3 was 98%.)
- Individual pass rate on the comprehensive written exam was greater than or equal to 80%. (Unit 2 pass rate was 94%; Unit 3 was 100%.)
- Overall pass rate among individuals for all portions of the exam was greater than or equal to 75%. (Unit 2 pass rate was 94%; Unit 3 was 98%.)

b. Findings

No findings of significance were identified.

.2 Licensed Operator Requalification Simulator Exam Observation

a. Inspection Scope

The inspectors observed the conduct of a licensed operator requalification simulator training examination on November 14, 2002. The inspectors observed licensed operator performance relative to the following activities: effective communications, implementation of normal, abnormal and emergency operating procedures, command and control, and technical specification compliance. The inspectors verified that the training evaluators adequately addressed operator performance issues that were identified during the exercise, and that applicable training objectives had been achieved.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

.1 "A" Emergency Diesel Generator Exhaust Damper Solenoid Valve Failure

a. Inspection Scope

The inspectors reviewed the licensee's activities following the failure of the solenoid valve for the "A" EDG ventilation exhaust damper, 2-HV-255A, relative to the implementation of the maintenance rule in accordance with 10 CFR 50.65, Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants. The review also verified the licensee's evaluation of the event as a maintenance rule functional failure in accordance with MP-24-MR-FAP710, Revision 0, "Maintenance Rule Functional Failures and Evaluations," and NUMARC 93-01, Revision 2, "Nuclear Energy Institute Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The inspectors also evaluated the effectiveness of the investigation of and corrective actions taken for a similar occurrence in May 2000.

b. Findings

The inspectors identified a violation of 10 CFR 50, Appendix B, Criterion XVI, for failure to determine the cause and take effective corrective action to preclude repetition for an EDG solenoid valve failure from May 2000. Subsequently, a failure of the same "A" EDG ventilation exhaust damper solenoid valve recurred in August 2002.

Introduction

On August 14, 2002, the discharge damper for the "A" EDG room ventilation system did not open on demand due to a solenoid operated valve (SOV) failure. The licensee declared the "A" EDG inoperable, entered the appropriate technical specification, replaced the SOV, and restored the "A" EDG to operable status. This issue was previously discussed in NRC Inspection Report 50-336/02-05 as Unresolved Item (URI) 50-336/02-05-02.

Description

During the licensee's investigation of the failure, independent failure analyses identified foreign material located in the internal passages of the SOV that contributed to the valve's failure to open. The inspectors determined that a previous failure from May 2000, was never fully investigated to ensure a root cause was identified and corrective actions taken to prevent recurrence. Specifically, the licensee identified the most likely cause for the previous failure was attributed to clogged air lines. However, no specific action was taken, beyond cycling the solenoid valve, to fully evaluate this apparent cause. Subsequently, the cause of the August 2002 occurrence was attributable to foreign material in the air lines.

Analysis

The failure to determine the cause and take effective corrective action to preclude repetition for a SOV failure for the "A" EDG room ventilation exhaust damper 2-HV-255A, was considered greater than minor because it affected the availability of the "A" EDG, which constitutes one train of a mitigating system. This finding regarding the failure to identify and prevent recurrence of a significant condition adverse to quality, is related to the licensee's Problem Identification and Resolution process. Phase 1 of the At-Power Reactor Safety Significance Determination Process (SDP) screened this finding to Phase 2 because it affected a mitigating system, and it resulted in the loss of safety function of a single train for greater than the Technical Specification allowed outage time. Phase 2 estimated the risk significance of this finding due to internal initiating events as White. The assumptions made in the Phase 2 analysis were as follows:

- The "A" EDG was unavailable.
- Because the inception time of the failure was unknown, an exposure time of one half the period since the last successful demonstration of functionality was used. The functionality of the "A" EDG room ventilation system had been successfully

demonstrated 27 days prior. Therefore, an exposure time of greater than three days and less than 30 days was used in the analysis.

- Recovery credit was assumed because sufficient time was available for the operators to open the "A" EDG room door using the guidance in EOP 2525, "Standard Post Trip Actions," ARP 2590F, Window D-32, "Diesel Generator 12U Room Temperature High/Low," and OP 2315E, "Diesel Generator Ventilation System;" operators had been trained on these procedures in both the initial licensing and requalification training programs; environmental conditions did not adversely impact these recovery actions; and no special equipment was needed to perform these recovery actions.

However, a review of the Phase 2 results indicated that they were conservative for two reasons. First, the characterization as White was due to the counting rule with the dominant accident sequences being two orders of magnitude below the Green-White threshold. Second, the Phase 2 SDP only allowed a recovery credit of 1; however, for this case more credit was appropriate. Specifically, within two minutes of the start of the diesel generator, the operators would have been alerted to the high temperature condition by an alarm (C08 Annunciator Window D-32, "Diesel Generator 12U Room Temperature Hi/Lo") in the control room. Also, the procedurally directed action for this condition (open the room door) was simple. As a result, a Phase 3 analysis of this finding was appropriate.

The Phase 2 SDP framework was used for the Phase 3 analysis because it identified the appropriate dominant accident sequences. The Phase 3 analysis consisted only of refinement of recovery credit. The recovery failure probability was estimated to be approximately  $2.0E-2$  using the Accident Sequence Precursor (ASP) Human Reliability Analysis (HRA) methodology. This failure probability corresponded to a recovery credit of 2.

After application of the refined operator recovery credit, the dominant accident sequence involved a loss of offsite power event, failure of the emergency diesel generators, failure of the turbine-driven auxiliary feedwater pump, failure to recover offsite power within one hour, and the failure of the operators to recover the "A" emergency diesel generator. The increase in core damage frequency of the finding due to internal initiating events was greater than  $1.0E-7$ , but less than  $1.0E-6$ .

The risk significance associated with a fire event was dominated by switchgear fires that resulted in station blackout events with the "A" EDG unavailable. However, the increase in core damage frequency due to fire events was substantially less than the contribution due to internal events. The risk significance of this finding due to seismic events was dominated by seismic events that result in losses of offsite power. However, the frequency of seismically induced loss of offsite power event was orders of magnitude less than the frequency of loss of offsite power events used in the internal event analysis. Therefore, the risk contribution due to fire and seismic events was negligible. This finding was also evaluated using Inspection Manual Chapter 0609, Appendix H, "Containment Integrity SDP." Because Millstone Unit 2 has a large dry containment and the dominant accident sequences did not involve either a steam generator tube rupture or an inter-system loss of coolant accident, the finding did not contribute to a significant



increase in the large early release frequency for the facility. As a result, the failure of the "A" EDG ventilation exhaust damper 2-HV-255A to open was very low risk (Green).

### Enforcement

10 CFR 50, Appendix B, Criterion XVI states, in part, that for significant conditions adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude repetition. The failure of the licensee to determine the cause of the May 2000 EDG exhaust damper solenoid valve failure and take adequate corrective action to preclude repetition, as evidenced by the subsequent failure on August 14, 2002, is considered a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." (NCV 50-336/02-06-01). This violation is associated with an inspection finding that is characterized by the significance determination process as having very low safety significance (Green) and is being treated as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR-02-08390. Based on this inspection, URI 50-336/02-05-02 is closed.

## .2 Engineered Safeguards Actuation (ESAS) System Power Supply Failure and Service Water System Valve Failure

### a. Inspection Scope

The inspectors reviewed the licensee's implementation of the maintenance rule, 10 CFR 50.65, in response to identified performance issues associated with the following condition reports (CRs):

- CR-02-11384, Power Supply Fuse Failures Result in Fault on ESAS Actuation Cabinet 5
- CR-02-13121, 2-SW-231A, "A" Emergency Diesel Generator Service Water Supply Bypass Valve Failed to Meet In-Service Test Acceptance Criteria

The inspectors verified that the failures were appropriately evaluated against applicable maintenance rule functional failure criteria, as set forth in Functional Administration Procedure MP-24-FAP710, "Maintenance Rule Functional Failures & Evaluations." The inspectors also discussed these issues with the system engineer and verified that they were appropriately tracked against each system's performance criteria.

### b. Findings

No findings of significance were identified.

## 1R13 Maintenance Risk Assessments and Emergent Work Evaluation

### .1 Scheduled Maintenance Risk Assessments

#### a. Inspection Scope

The inspectors verified the conduct and adequacy of scheduled maintenance risk assessments for plant conditions affected by the conduct of the following scheduled maintenance and testing activities:

- Unit 2 Work Schedule for the week of 9/29/02 - maintenance and testing on the containment sump/shutdown cooling heat exchanger outlet valves.
- Unit 2 Work Schedule for the week of 10/20/02 - maintenance and testing on the functional test of auto auxiliary feedwater logic and "C" Charging Pump.
- Unit 2 Work Schedule for the week of 11/3/02 - maintenance and testing on the "A" and "B" Charging Pump discharge check valve IST, Two Pump Test.
- Unit 2 Work Schedule for the week of 12/1/02 - maintenance and testing on the engineered safeguards actuation system undervoltage reserve service station transformer and sequencer.
- Unit 2 Work Schedule for the week of 12/15/02 - maintenance and testing on the auto auxiliary feedwater logic; "C" Charging Pump coupling inspection; station blackout diesel out; "B" Motor Driven Auxiliary Feedwater Pump; 24E aligned to 24D.
- Unit 2 Work Schedule for the week of 12/22/02 - maintenance and testing on the containment sump and shutdown cooling heat exchanger RBCCW outlet valves operability and stroke surveillance.

The inspectors utilized the Equipment Out of Service (EOOS) quantitative risk assessment tool to evaluate the risk of the above plant configurations and compared the result to the licensee's stated risk. The inspectors also verified that the licensee entered appropriate risk categories and implemented risk management actions as necessary. In addition, the inspectors reviewed the following related licensee documents:

- MP-14-OPS-GDL02, Revision 007, "Operations Standards"
- MP-20-MMM, Revision 001, "Work Management"
- MP-20-WM-FAP02.1, Revision 005-02, "Conduct of On-Line Maintenance"
- MP-20-WM-SAP02, Revision 1, "On-Line Maintenance"
- Control Room Logs

#### b. Findings

No findings of significance were identified.

### .2 Emergent Red Risk Assessment

#### a. Inspection Scope

The inspectors verified the conduct and adequacy of a risk assessment associated with an emergent work activity when an engineered safeguards actuation system (ESAS) power supply failed on October 19, 2002. The licensee determined the resultant risk

from this plant condition was "Red" using the EOOS quantitative risk assessment tool. The inspectors responded to the site and verified the licensee's risk determination using the EOOS tool. The inspectors also verified that the licensee entered the appropriate risk category and that risk management actions were implemented. The following related licensee documents were reviewed:

- Control Room Logs
- MP-20-WM-FAP02.1, Revision 005-02, "Conduct of On-Line Maintenance"
- MP-14-OPS-GDL02, Revision 007, "Operations Standards"
- CR-02-11398, Difficulties Encountered Recovering ESAS Actuation Cabinet #5
- CR-02-11397, MSI Actuation Sig CH 1 Trip Ann Window CO-1, A-37 Was Alarming Without Having CH 1 MSI, And Continues To Come In And Clear
- CR-02-11384, Power Supply Fuses Failures Result In Fault On ESAS Actuation Cabinet #5

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions

.1 Loss of Facility 1 Engineered Safeguards Actuation System Cabinet Power Supply

a. Inspection Scope

The inspectors reviewed personnel performance in coping with non-routine evolutions and transients. Specifically, the inspectors reviewed personnel response to a loss of the Facility 1 Engineered Safeguards Actuation System (ESAS) cabinet power supply. The inspectors reviewed operator logs, plant computer data, and response procedures, observed control room briefs, and conducted an emergent risk assessment (see Section 1R13.2). The inspectors also reviewed the following related licensee documents:

- OP-2205, Revision 013, Plant Shutdown
- OP-2204, Revision 018-02, Load Changes
- CR-02-11398, Difficulties Encountered Recovering ESAS Actuation Cabinet #5
- CR-02-11397, MSI Actuation Sig CH 1 Trip Ann. Window CO-1, A-37 was Alarming Without Having CH 1 MSI, and Continues to Come In and Clear
- CR-02-11384, Power Supply Fuse Failures Result in Fault on ESAS Actuation Cabinet 5
- CR-02-11411, Reportability Determination Required Associated with ESAS Actuation Cabinet #5 Power Supply Failure on 10/19/02
- Control Room Logs

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

.1 B61 Enclosure Ventilation

a. Inspection Scope

The inspectors reviewed the operability determination associated with the B61 enclosure ventilation to ensure that the impact from the inoperability of the system was properly assessed and no unrecognized increase in risk had occurred. The inspectors also reviewed compensatory measures to ensure that the compensatory measures were in place and were appropriately controlled. The inspectors reviewed the following related licensee documents:

- CR-02-13166, Fire, HELB Barrier May Not Be Operable
- Technical Requirements Manual 3/4.8.2, "Onsite Power AC Distribution Systems"
- Technical Specification 3.6.5.2, Enclosure Building
- OP-2315D, Revision 011-07, Section 4.14, "Compensatory Actions for the Loss of or Maintenance to MCC-B61 Enclosure Cooling System"

b. Findings

No findings of significance were identified.

.2 Nitrogen Leakage from SEXA8 Tube 1 RCP Cable Penetration

a. Inspection Scope

The inspectors reviewed the operability determination associated with SEXA8 Tube 1 RCP cable penetration to ensure that operability of the containment boundary was justified and that the containment boundary remained available and no unrecognized increase in risk had occurred. The inspectors also reviewed compensatory measures to ensure that the compensatory measures were in place and were appropriately controlled. The inspectors reviewed the following related licensee documents:

- RECO/OD No. MP2-026-02 N2 Leakage from SEXA8 Tube 1 RCP cable penetration.
- Technical Specifications 3.6.1.1 and 3.6.1.2, Containment Integrity and Containment Leakage
- FSAR 8.7.3.2 Tests and Inspections
- PDCR No. 2-7-81, Nitrogen Supply to Electrical Penetration
- SP 2605C-001, Revision 009-02, Containment Leak Rate Data Collection Sheet

b. Findings

No findings of significance were identified.

.3 Lack of Relief Valves on Vital Chilled Water Condensers

a. Inspection Scope

The inspectors evaluated the licensee's operability assessment for a non-conforming condition regarding the lack of relief valves on vital chilled water condensers. The

inspectors reviewed operability determination (OD) MP2-034-02, which detailed that vital chilled water condensers, X-169A and B, which supply the DC equipment rooms during specific accident conditions, failed to have the appropriate relief valves installed for overpressure protection in accordance with Section VIII of the American Society of Mechanical Engineers Boiler & Pressure Vessel Code. The inspectors verified that the "operable, but degraded" determination contained in the OD was appropriate for the given condition and that adequate basis was provided to support the determination. The inspectors verified that the licensee had entered this issue into its corrective action program for resolution as CR-02-12241 and CR-02-12295.

b. Findings

No findings of significance were identified.

.4 Charging System

a. Inspection Scope

The inspectors reviewed operability determination (OD) MP2-014-02, Charging System, to ensure that operability of the charging system was justified and no unrecognized increase in risk had occurred. The inspectors reviewed the following related licensee documents:

- NRC Generic Letter No. 91-18, Revision 1
- Millstone Unit 2 Technical Specifications and Technical Requirements Manuals
- RP-5, Revision 002-04, "Operability Determinations"
- Millstone Unit 2 Condition Reports (CR) 02-10605 and 06997
- Millstone Unit 2 Final Safety Analysis Report (FSAR)

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

.1 Cumulative Effects of Operator WorkArrounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of operator workarounds on system reliability, availability, and potential for system misoperation. The inspectors also reviewed the cumulative effect of operator WorkArrounds on multiple mitigating systems and the ability of operators to respond to plant transients and accidents. The inspectors reviewed the following related licensee documents:

- CR-02-12615, The process of Identifying, Evaluating, and Reviewing Operator WorkArrounds is not Consistent between Unit 2 and Unit 3
- Millstone Station Performance Indicator Report, Aggregate Impact Performance Indicator

- C OP 200.9, Revision 002, Operational Performance Status
- Operator work around Management Summary
- Millstone Power Station Operational Focus Report
- OP-3260E, Revision 1, Operator WorkArrounds

b. Findings

No findings of significance were identified.

.2 Turbine Driven Auxiliary Feedwater (TDAFW) Steam Trap Compensatory Actions

a. Inspection Scope

The inspectors reviewed compensatory actions taken for the failure of a TDAFW steam line sensor. The inspectors evaluated the condition to determine if it should have been classified as an operator work-around and if there was any effect on human reliability in responding to an initiating event. The inspectors reviewed the following related licensee documents:

- CR-02-13149, Establishing Compensatory Actions or Temporary Logs
- Operations Department Instruction (ODI) 2-OPS-6.23, Revision 4, Compensatory Actions/Temporary Logs
- CR-02-13065, Auxiliary Feedwater Turbine Steam Line Level Sensor LS-4590 did not Function Properly

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

A plant modification that attached an anti-vibration support onto the discharge piping of the charging system was reviewed by the inspectors to ensure that the modification did not adversely affect the availability, reliability, or functional capability of any safety related structures, systems or components. The design bases of the charging system and a sample of its interfacing systems were evaluated to ensure that the installed modification did not introduce the potential for common cause failures or unanalyzed conditions that could affect plant risk. The inspection also included a review of the overall purpose and a sample of the effects of the modification. A partial system walkdown of the charging system was performed by the inspectors and included the location of the vibration induced fatigue failure and the validation of numerous as-built parameters of the system. To support this evaluation the inspectors reviewed the following references:

- Refer to Attachment 1 for list of documents reviewed

Dominion is currently evaluating potential changes to improve the reliability of the charging system. This inspection focused on the current state of the system, including the anti-vibration support installed on the discharge piping of the charging system.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance test (PMT) activities to determine whether the tests were performed in accordance with the approved procedures. The inspectors assessed the test's adequacy by comparing the test methodology to the scope of maintenance work performed. In addition, the inspectors evaluated the test acceptance criteria to verify whether the test criteria demonstrated that the tested components satisfied the applicable design and licensing bases and the Technical Specification requirements. The inspectors reviewed the recorded test data to determine whether the acceptance criteria were satisfied. In addition, the inspectors verified that any identified deficiencies were entered into the licensee's corrective action program. The following maintenance activities and specified post maintenance tests were evaluated:

- "B" DC Switchgear Room Chiller
- Atmospheric Dump Valve Positioner Replacement Maintenance
- "B" Service Water Pump Sodium Hypochlorite Supply Line Maintenance
- Boric Acid Tank Level Indicator
- ESAS Power Supply Replacement
- Diesel Generator Air Supply Vent Solenoid Replacement

The following related licensee documents were reviewed:

- Refer to Attachment 1 for list of reviewed post maintenance documents

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors reviewed licensee performance of surveillance testing of structures, systems, and components to ensure these systems are capable of performing their intended safety functions and to ensure related technical specification (TS) requirements are met. The inspectors reviewed surveillance testing activities associated with the following:

- "C" Service Water Pump

- Facility 1 Containment Spray Pump
- "A" HPSI Pump
- ESAS Power Supply
- "A" and "B" Charging Pumps IST and Check Valves
- AFW Failure Mode IST

The inspectors attended test briefs, verified selected prerequisites and precautions, and verified the tests were performed in accordance with the procedural steps. The inspectors also reviewed completed data sheets and verified that TS requirements were met. The inspectors also reviewed the following related licensee documents:

- Refer to Attachment 1 for list of reviewed surveillance testing documents
- Technical Specification Surveillance Requirements
- Individual Surveillance Test Procedure Data Forms
- MP-24-IST-FAP01.2-1, Revision 0, Pump Test Data Evaluation Form
- Pump Historical Test Data
- Millstone Unit 2 Pump and Valves Bases Document CVCS System
- Millstone Unit 2 Inservice Pump and Valve Testing Bases Document, Revision 3, Change 8

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

.1 Temporary Drain Valve and Pressure Gauge

a. Inspection Scope

The inspectors reviewed Temporary Modification 2-012-18, Revision 0, Temporary Drain Valve and Pressure Gauge for Demineralizer 2-CND-DEMIN-1G, to verify that the temporary modification did not affect the safety function of important safety systems. The inspectors reviewed the temporary modification and its associated 10 CFR 50.59 screening against the Final Safety Analysis Report (FSAR) and Technical Specifications to ensure the modification did not affect system operability or availability. The inspectors also reviewed the following related licensee documents:

- Work Control-10, Revision 004-01, Temporary Modifications
- FSAR, Chapter 10, Steam and Power Conversion System
- CP-2804F, Revision 005-02, Condensate Polishing Demineralizer Resin Transfer, Chemical Regeneration and URC
- Condensate Demineralizer Drawing No. 25213-26801, Sheet 2

b. Findings

No findings of significance were identified.

.2 Reactor Coolant Pump Upper Oil Reservoir Indication Alarm



a. Inspection Scope

The inspectors reviewed Temporary Modification 2-02-017, "A" Reactor Coolant Pump Upper Oil Reservoir Indication Alarm. The inspectors verified that the design bases, licensing bases, and performance capability of selected risk significant structures, systems, and components had not been degraded through the application of this modification and that this modification did not place the plant in an unsafe or unanalyzed condition. Control room instrumentation, calibration data and alarm response procedures related to this temporary modification were evaluated.

b. Findings

No findings of significance were identified.

## **Emergency Preparedness [EP]**

### 1EP6 Drill Evaluation

#### .1 Notification Performance Indicator and Drill Critique

a. Inspection Scope

The inspectors observed a licensee drill on December 4, 2002, which would be utilized for reporting performance indicator data for notification, to identify any weaknesses or deficiencies in licensee performance. The inspectors observed the licensee drill critique to ensure that the licensee appropriately identified drill deficiencies. The following related documents were reviewed:

- Millstone Emergency Plan
- MP-26-EPI-FAP07, Revision 001-06, "Notifications and Communications"
- Emergency Planning Drill Objectives

b. Findings

No findings of significance were Identified.

## **2. RADIATION SAFETY**

### **Occupational Radiation Safety [OS]**

#### 2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

During December 9 - 12, 2002, the inspectors conducted the following activities to evaluate the operability and accuracy of radiation monitoring instrumentation, and the adequacy of the respiratory protection program for issuing self-contained breathing apparatus to emergency response personnel. Implementation of these programs was

reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

- The inspectors reviewed the relevant procedures and observed technicians performing radioactive source calibrations on the Unit 3 "D" Main Steam Line Monitor, and a portable survey instrument, RO-20 (No. 1185).
- The inspectors observed technicians performing radioactive source and functional checks on a variety of instruments, staged for use in Units 2 and 3, including a Small Articles Monitor (No. 64); portable ion chambers, RO-2A (Nos. 2871, 2878), and RO-20 (No.1180); high range survey instruments, Telector (No. 18243) and Teleprobe (No. 178), electronic dosimeters (Nos. 7999, 7724, 7409); alpha monitor (SAC-4 No. 879); personnel contamination monitors (PCM-1B Nos. 1253, 1249, 1162, & CM-11 No. 106); and a neutron survey instrument (REM-500, No. 187).
- The inspectors reviewed the calibration procedure and current source activity/dose rate characterizations for the Shepard Model 89 calibrator, used for instrument calibrations, and observed a technician perform safety interlock testing on the irradiator.
- The inspectors evaluated the adequacy of the respiratory protection program regarding the maintenance and issuance of self-contained breathing apparatus (SCBA) to emergency response personnel. Training and qualification records were reviewed for three licensed operators from each of the five operating shifts for Unit 2 and for Unit 3, and for three radiation protection technicians from each unit, who would be required to wear SCBAs in the event of an emergency. Three (3) SCBAs from each control room were physically checked and the maintenance and functional test records were reviewed for selected SCBAs.

b. Findings

No findings of significance were identified.

### 3. SAFEGUARDS

#### Physical Protection [PP]

##### 3PP1 Access Authorization Program

a. Inspection Scope

The following activities were conducted to determine the effectiveness of Dominion Nuclear Connecticut's behavior observation portion of the personnel screening and fitness-for-duty programs as measured against the requirements of 10 CFR 26.22 and Dominion's Fitness for Duty Program documents.

Five supervisors representing Nuclear Oversight, Health Physics, Supply Chain, Nuclear Site Services, and Chemistry were interviewed, on October 22 and 23, 2002, regarding

their understanding of behavior observation responsibilities and their ability to recognize aberrant behavior traits. Two (2) Access Authorization/Fitness-for-Duty self-assessments, an audit, and event reports and loggable events for the four previous quarters were reviewed during October 21-25, 2002. On October 22 and 23, 2002, five (5) individuals who perform escort duties were interviewed to establish their knowledge level of those duties. Behavior observation training procedures and records were reviewed on October 23, 2002.

b. Findings

No findings of significance were identified.

3PP2 Access Control

a. Inspection Scope

The following activities were conducted during October 21-25, 2002 to verify that Dominion Nuclear Connecticut has effective site access controls, and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area as measured against 10 CFR 73.55(d) and the Physical Security Plan and Procedures.

Site access control activities were observed, including personnel and package processing through the search equipment during peak ingress periods on October 22, 23, and 24, 2002, and vehicle searches, on October 24, 2002. On October 22, 2002, testing of all access control equipment, including metal detectors, explosive material detectors, and X-ray examination equipment, was observed. The Access Control event log, an audit, and three (3) maintenance work requests were also reviewed.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES [OA]**

4OA1 Performance Indicator Verification

.1 RETS/ODCM Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed the following documents to verify the adequacy of performance indicator data provided by Dominion for the second quarter 2001 to the third quarter 2002 (6 quarters):

- monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases;

- quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- 2002 condition reports and corrective actions; and
- associated procedures.

The inspectors also performed an independent verification of the licensee's capability for calculating projected doses to the public resulting from discharges of radioactive liquid, gases, and particulate using the licensee's meteorological monitoring data. The licensee used its computer code for radioactive gas releases. The NRC used the NRC PC-DOSE computer code. The comparison results were evaluated.

b. Findings

No findings of significance were identified.

.2 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors reviewed implementation of the licensee's Occupational Exposure Control Effectiveness Performance Indicator (PI) program. Specifically, the inspectors reviewed Condition Reports, and associated documents, for occurrences involving locked high radiation areas, very high radiation areas, and unplanned personnel exposures, since the last inspection, against the criteria specified in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2, to verify that all occurrences that met the NEI criteria were identified and reported as PIs.

b. Findings

No findings of significance were identified.

.3 Safeguards

a. Inspection Scope

The inspectors reviewed Dominion Nuclear Connecticut's programs for gathering and submitting data for the Fitness-for-Duty, Personnel Screening, and Protected Area Security Equipment Performance Indicators. The review included the licensee's tracking and trending reports, personnel interviews and security event reports for the Performance Indicator data collected from the 2nd quarter of 2001 through the 1st quarter of 2002.

b. Findings

No findings of significance were identified.

.4 Safety System Functional Failures

a. Inspection Scope

The inspectors reviewed licensee event reports, monthly operating reports, plant process computer power history information, and NRC inspection reports to identify significant plant power changes and plant scrams that occurred from the 3<sup>rd</sup> quarter of 2001, through the 3<sup>rd</sup> quarter 2002. The inspectors compared this information with the licensee's data reported to the NRC for the time period listed above for the safety system functional failures performance indicators. The following related documents were reviewed:

- LER 2001-007-00, "Movement of Heavy Loads Not Addressed in Procedure"
- Millstone 2 3<sup>rd</sup> Quarter Performance Indicators, "Safety System Functional Failures"
- NEI-99-02, Revision 2, "Regulatory Assessment Performance Indicator Guideline"
- NUREG-1022, Revision 2, "Event Reporting Guidelines 10 CFR 50.72 and 50.73"

b. Findings

No findings of significance were identified.

.5 Auxiliary Feedwater System

a. Inspection Scope

The inspectors reviewed the current Auxiliary Feedwater (AFW) System Health and Maintenance Rule Report and a selection of Millstone Unit 2 AFW operating experience data, industry AFW operating experience reports, Dominion condition reports related to the AFW system and other associated documents, in order to establish the adequate disposition of occurrences or patterns addressed in the criteria specified in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator (PI) Guideline, Revision 2. This assessment was conducted to verify that occurrences meeting the NEI criteria were identified, tracked, trended, assessed and reported in the Millstone Unit 2 AFW PI.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Radiation Monitoring and Respiratory Protection Programs

a. Inspection Scope

The inspectors reviewed selected Condition Reports (CR) and Radiological Protection Department Self-Assessments to evaluate the licensee's threshold for identifying, evaluating, and resolving problems in implementing the radiation monitoring and respiratory protection programs. Included in this review were nine CRs and two self-assessments. This review was conducted against the criteria contained in 10 CFR 20,

Standards For Protection Against Radiation, Technical Specifications, and the licensee's procedures.

b. Findings

No findings of significance were identified.

.2 Pressurizer Heater Sleeve Penetration Leak and Reactor Coolant Pump Seal Cooler Leak

a. Inspection Scope

Corrective actions associated with reactor coolant boundary leakage issues identified in LER 50-336/2002-001-00 were selected as Problem Identification and Resolution (P&IR) sample for review using the guidance in NRC Inspection Procedure 71152.

The inspectors reviewed the licensee's condition reports (CR) related to a pressurizer (PZR) heater sleeve penetration leak and a reactor coolant pump seal cooler leak. Both events were licensee identified and reported to the NRC under LER 50-336/2002-001-00 as a violation of the licensee's technical specifications which states "Reactor coolant leakage shall be limited to no pressure boundary leakage." Additionally, the inspectors reviewed a CR that evaluated why the licensee did not characterize the PZR failure as a Maintenance Rule functional failure (MRFF). The CRs were reviewed to ensure that the licensee identified the deficiencies that caused the events, and had developed and implemented corrective actions that were appropriate to correct the deficiencies found. The inspection included reviewing licensee documentation, NRC communications and interviewing personnel.

The inspectors observed that a visual inspection of the tube bundle was performed as a result of a CR written by the licensee based on NRC Information Notice 90-10 and Generic Letter 97-01. The inspection identified small boron deposits indicating a small leak at the PZR heater sleeve penetrations due to a crack in the alloy 600 material. The inspectors found that the licensee had evaluated the PZR leak issues through several CRs, had repaired the two leaks, and had created a program to identify all Alloy 600 in the plant and perform inspections of those locations. This program is to be implemented prior to the next refueling outage.

The inspectors reviewed the licensee's actions related to the MRFF assessment. The licensee had revised the computer software that tracks these failures. The change ensured that a second check is required on MRFF determinations prior to entering the information into the MR database.

The inspectors reviewed the CR related to the reactor coolant pump (RCP) seal cooler leak. The licensee corrective actions included replacing the defective cooler and verifying that a leak did not exist on the other coolers. The licensee is currently working with the manufacturer to determine the actual location of the leak in the cooler (leak rate varied between approximately 0.0003-0.003 gpm) to determine if there are any generic implications.

b. Findings

No findings of significance were identified.

.3 Shift Failed to Perform Off-Site Circuit Verification within 1 Hour of Declaring the "A" EDG Inoperable

a. Inspection Scope

Corrective actions associated with the failure of an operating shift to perform a required off-site electrical circuit verification were selected as P&IR sample for review using the guidance in NRC Inspection Procedure 71152.

The inspectors reviewed CR 02-05785 that identified the operating shift failed to verify the operability of an off-site circuit within 1 hour of declaring the "A" EDG inoperable. The inspectors verified that the licensee was identifying, evaluating, and correcting problems associated with this issue and that corrective actions were appropriate. This issue was a repeat of CR M2-00-2945 and was selected for follow-up review due to ineffective corrective actions and subsequent recurrence of the failure to perform off-site circuit verification within the time required by the technical specifications.

The inspectors verified that corrective actions were implemented by the licensee and were commensurate with the significance of the issue. The inspectors also reviewed the licensee's actions regarding extent of condition, generic implications, timeliness of corrective action, actions to prevent recurrence, and identification of the root and contributing causes of the problem.

b. Findings

No findings of significance were identified.

.4 Other Findings Related to Identification and Resolution of Problems

A finding discussed in Section 1R12.1 of this report is related to the licensee's implementation of the Problem Identification and Resolution process. The finding involves the failure to determine the cause and take effective corrective action to preclude repetition, for an EDG solenoid valve failure that occurred in May 2000, and a subsequent failure that occurred in August 2002.

40A3 Event Follow-up

- .1 (Closed) Licensee Event Report (LER) 50-336/2002-001-00: Two Reactor Coolant System Pressure Boundary Leakage Events. The LER was written to document three pressure boundary leaks. Two of the leaks occurred at the pressurizer heater penetrations and the third occurred in the reactor coolant pump seal cooler. The inspectors determined that the licensee entered the issues into the corrective action program and had taken actions to fix the problems. No additional findings of significance were identified. This LER is closed.

Technical Specification 3.4.6.2 states that reactor coolant system leakage shall be limited to no pressure boundary leakage in modes 1 through 4. Contrary to this requirement, on February 19 and 22, 2002 while shutdown (mode 5), the licensee's visual inspections found small boron deposits on two pressurizer heater penetrations indicating that a small leak was present during the previous operating cycle and the licensee conducted helium leak tests which found that the RCP seal cooler had been leaking at an estimated to be less than 0.003 gpm during the previous operating cycle. Both components are part of the pressure boundary. This violation will be tracked as an unresolved item pending an evaluation of its risk significance.

**(URI 50-336/02-06-02)**

- .2 (Closed) LER 50-336/2002-002: Reactor Trip Due To Turbine Trip. On April 19, 2002, while operating at approximately 100% power, Unit 2 experienced a reactor trip caused by a turbine trip. The turbine trip resulted from a stator cooling water temperature switch exceeding its setpoint.

The inspectors verified the calibration data, work order activities, selected condition reports, including their associated corrective actions, and vendor data related to the temperature switch. The April turbine trip/reactor trip, including the specific manual operator actions that were implemented, and the response of AFW system to the consequences of the trip were evaluated against conditions described in the Millstone Unit 2, Final Safety Analysis Report as anticipated transients. The inspectors' on-site review, in consultation with the Region I Senior Reactor Analyst, identified no findings of significance. This LER is closed.

- .3 (Closed) LER 50-336/2002-003-00: Failure to Comply with Technical Specification Action Statement for One Diesel Generator Inoperable. On May 22, 2002, with the Unit in Mode 1 at 100% power and one emergency diesel generator (EDG) inoperable due to planned EDG testing, Operations personnel failed to perform verification of offsite power sources within one hour as required by Technical Specification (TS) 3.8.1.1, action b.1. The failure to perform TS 3.8.1.1, action b.1 existed for approximately 2 hours and 45 minutes beyond the one hour requirement. The root cause of the event was attributed to inadequate procedure design with human error and poor work practices as a contributing cause. Corrective actions included the generation of condition report (CR) CR-02-05785, the verification of offsite power sources in accordance with the applicable TS action statement, and to prevent recurrence, the monthly EDG surveillance procedures were revised to provide an action step to complete the one hour offsite circuit TS action statement before proceeding further with the procedure. Additionally, the personnel involved in this event were counseled. Because of successful offsite power verification, the short time during which the surveillance was not implemented, and the availability of alarms that would have alerted the operator if an actual unavailability or loss of required offsite power sources had occurred, the missed TS surveillance constitutes a violation of minor significance. This LER is closed.
- .4 (Closed) LER 50-336/2002-004-00: Reactor Shutdown Due to Entry into Technical Specification 3.0.3. On August 3, 2002, the licensee conducted a Technical Specification required plant shutdown, after identifying two leaks on the common charging pump discharge piping header. Based on the small size of the leak, the



charging system remained in-service during the plant shutdown. The licensee determined the cause of the leaks to be socket weld failure due to vibration induced high cycle fatigue. The faulty socket welds were replaced with a stress-reduced type socket weld that was less susceptible to cycle fatigue and, as an interim corrective measure, installed anti-vibration clamps on the piping.

This event was documented in NRC Inspection Report 50-336/02-05, Sections 1R14.1 and 4OA2. The inspectors identified two Green non-cited violations of NRC requirements which involved (1) a failure to take adequate corrective actions for previous weld fatigue failures, and (2) an inadequate safety evaluation for usage of an alternate charging flow path. The inspectors reviewed the licensee's event review team report and corrective actions taken and planned, to verify whether they appeared reasonable. Based on an on-site review of this LER, no new issues were identified. The licensee entered this finding into their corrective action program as Condition Reports 02-08076, 02-08251, and 02-08761. This LER is closed.

- .5 (Closed) LER 50-336/2002-005-00: Automatic Reactor Trip Due to Low Steam Generator Level During Power Ascension. On August 7, 2002, with Millstone 2 operating in Mode 1 and in power ascension at 55 percent power, an automatic reactor trip occurred due to low steam generator level. The operators opened the motor operated isolation valve, 2-FW-38B, to place the "B" Steam Generator Feedwater Pump (SGFP) in service. Steam generator level deviation alarms were received almost immediately. The operators commenced closing 2-FW-38B, but the valve did not close in sufficient time to recover steam generator levels and prevent the reactor trip. The licensee's root cause team determined the loss of feedwater flow to the steam generators was due to failure of the "B" SGFP discharge check valve (2-FW-1B) to fully seat due to inadequate anti-rotation welds installed in 1990. The event was reported pursuant to 10 CFR 50.73(a)(2)(iv)(A). Upon an onsite review of this LER, the inspectors determined there were no violations of NRC requirements. This event has been entered into the licensee's corrective action program as Condition Report CR-02-08189. This LER is closed.

#### 4OA5 Other Activities

##### .1 Temporary Instruction 2515/148 - Interim Compensatory Measures (Security)

###### a. Inspection Scope

An audit of the licensee's performance of the interim compensatory measures imposed by the NRC's Order Modifying License, issued February 25, 2002 was completed in accordance with the specifications of NRC Inspection Manual Temporary Instruction (TI) 2515/148, Revision 1, Appendix A, dated September 13, 2002.

###### b. Findings

No findings of significance were identified.

##### .2 Temporary Instruction 2515/149 - Mitigating Systems Performance Index Pilot Verification

a. Inspection Scope

The inspectors and the Region I Senior Reactor Analyst (SRA) reviewed the licensee's implementation of the mitigating systems performance index (MSPI) pilot program during the week of November 4, 2002. The inspection was completed in accordance with Temporary Instruction 2515/149, Mitigating Systems Performance Index Pilot Verification. The Unit 2 residual heat removal and cooling water support systems and the Unit 3 high pressure safety injection and cooling water support systems were reviewed as part of the MSPI verification activity. The inspectors and SRA interviewed risk analysts, system engineers, and performance indicator data specialists. The inspectors reviewed system drawings, PRA models and PRA success criteria, NEI database input, system boundary assumptions, Millstone performance indicators, Maintenance Rule Scoping Tables, and other licensee documentation.

b. Findings

The specific audit results of TI 2515/149 are documented in Attachment 2 to this inspection report and were discussed with Dominion on November 7, 2002.

4OA6 Meetings, including Exit

.1 Safeguards Exit Meeting Summary

The inspectors met with Dominion representatives at the conclusion of the inspection on October 24, 2002. At that time, the purpose and scope of the inspection were reviewed, and the preliminary findings were presented. The licensee acknowledged the preliminary inspection findings.

.2 Licensed Operator Requalification Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 5, 2002.

.3 Occupational Exposure Control Effectiveness Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 12, 2002.

.4 Resident Exit Meeting Summary

The inspectors presented the inspection results to Mr. Alan Price and other members of licensee management on January 27, 2003. The inspectors asked the licensee whether any material examined during this inspection should be considered proprietary. No proprietary information was identified.

## ATTACHMENT 1

**SUPPLEMENTAL INFORMATION**a. Key Points of Contact

J. A. Price	Site Vice President
P. Baumann	Supervisor, Component Engineering Team
J. Campbell	Manager - Nuclear Protection Services
A. Chyra	PRA Engineer
D. Dodson	(Acting) Manager, Licensing
S. Garver	Supervisor, Site Fire Protection
M. Gelinis	Security Analyst
S. Heard	(Acting) Director, Nuclear Safety & Licensing
W. Hoffner	Manager, Operations
P. Jewett	Supervisor - FFD & Access Programs
J. Kunze	Assistant Manager, Unit 2 Operations
P. Marchese	FFD & Access Authorization
D. Meekhoff	Supervisor, Nuclear Operations Support
P. Parulis	Manager, Nuclear Oversight
N. Sacco	Engineering Supervisor
D. Smith	Burns General Manager
J. Smith	Supervisor - Nuclear Security Operations
P. Willoughby	Supervisor - Licensing

b. List of Items Opened, Closed and DiscussedOpened

50-336/02-06-02	URI	Reactor Coolant System Leakage (4OA3.1)
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Closed

50-336/2002-001-00	LER	Two Reactor Coolant System Pressure Boundary Leakage Events (4OA3.1)
50-336/2002-002-00	LER	Reactor Trip Due To Turbine Trip (4OA3.2)
50-336/2002-003-00	LER	Failure to Comply with Technical Specification Action Statement for One Diesel Generator Inoperable (4OA3.3)
50-336/2002-004-00	LER	Reactor Shutdown Due to Entry into Technical Specification 3.0.3. (4OA3.4)
50-336/2002-005-00	LER	Automatic Reactor Trip Due to Low Steam Generator Level During Power Ascension (4OA3.5)
50-336/02-05-02	URI	Licensee's failure to implement appropriate preventive maintenance to the EDG exhaust damper solenoid valve (1R12.1)

Opened and Closed During this Inspection

50-336/2002-06-01	NCV	Licensee's failure to determine cause and prevent recurrence of EDG exhaust damper solenoid valve failure (1R12.1)
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c. Partial List of Documents ReviewedPartial Equipment Alignment

Surveillance Procedure (SP) 2606C, Revision 013-01, "CS Train Alignment Check, Facility 1"  
 P&ID 25203-26015 Sheet 1, Revision 29, "Low Pressure Safety Injection"  
 P&ID 25203-26015 Sheet 2, Revision 31, "High Pressure Safety Injection"  
 SP 2606D-02, Revision 015-01, "CS Train Alignment Check, Facility 2"  
 SP 2604F-02, Revision 015-01, "HPSI System Valve Alignment Check, Facility 2"  
 SP 2604M-02, Revision 017-02, "LPSI System Valve Alignment Check, Facility 2"  
 Surveillance Procedure (SP) 2604E, Revision 017-01, "HPSI System Valve Alignment Check, Facility 1"  
 OP 2304E, Revision 014-01 " Charging Pumps"  
 SP 2601I, Revision 001-06, Charging Pump Inservice Tests

Complete Equipment Alignment

CR-02-13121, 2-SW-231A Inop Based on Close Stroke Time  
 CR-02-12509, Service Water Flow Predicted for Winter Seismic Event  
 CR-02-12607, Service Water System Flow Model Case Alignments  
 CR-02-12510, MP2 Service Water Flow Model Calc Changes Made Without Documenting the Change in all Calculations  
 CR-02-12565, Service Water System Failure Mode and Effects Analysis (FMEA) for LOCA and Non-QA Passive Piping Assumptions  
 CR-02-13094, Service Water Flow During Surveillance Less Than Expected  
 CR-02-13392, Packing Gland Nut/Stud Degradation on 2-SW-3A (as service water header main isolation valve)  
 CR-02-13387, Minor Packing Leakage on Service Water Valve 2-SW-32B (strainer L1A D/P isolation valve)  
 CR-02-06595, Chip in Arcor Coating on Service Water Inlet Spool to X18A 9 A RBCCW Heat Exchanger)  
 CR-02-10963, Coating Degradation Inside Outlet Channel Head on X18B, B RBCCW Heat Exchanger  
 CR-02-01624, Service Water Pipe Coating does not Match That Specified on Spool Drawings  
 CR-01-00749, Valve Overhaul Required to Support MR Action Plan System 2320  
 CR-01-10984, A EDG Service Water Bypass Valve 2-SW-231 Failing to Fully Close Against High Service Water Flows

Fire Protection Evaluations Reviewed

FP-EV-98-0003, "Non-rated Door Providing Separation between the Unit 2 Control Room and Technical Services Area"

FP-EV-98-0006, "Partial Suppression and Partial Detection in Appendix-R Fire Area R-1"

FP-EV-98-0023, "Lack of Rated Fire Door Penetrating Appendix-R Boundary Wall Separating Unit 2 Control Room and East 480 Volt Load Center Room"

FP-EV-98-0024, "Technical Evaluation for the Lack of an Operable Fire Damper in Ductwork Penetrating the Appendix R Fire Wall Between the East Electrical Penetration Room and the Enclosure Building Filtration System Room" (Engineering Evaluation No. 123)

FP-EV-98-0025, "Technical Evaluation for the Inadequate Blockout in the Appendix R Fire Wall between the East Electrical Penetration Room and the Enclosure Building Filtration System Room" (Engineering Evaluation No. 143)

FP-EV-98-0028, "Low Conductivity, Fire Retardant Industrial Grade Carpet in Unit 2 Control Room"

FP-EV-98-0031, "Combustible Loading, Fire Protection Features, and Double Fire Doors Penetrating West Wall of Operator Break Room"

FP-EV-98-0037, "Penetration Seals in the Floor of the Auxiliary Building Control Room at Elevation 36'-6" (Old Evaluation 98-1)"

FP-EV-98-0045, "Penetration Seals in the Floor of the Auxiliary Building Control Room at Elevation 36'-6" (Old Evaluation 95-2)"

FP-EV-98-0048, "Cable Vault Access Hatch Seals (Old Evaluation 122)"

FP-EV-98-0042, "Separation of Millstone Unit 2 Turbine Building and Unit 1 Turnover Areas/Turbine Building (Old Evaluation #75)"

FP-EV-99-0002, "Expansion Joints in Fire Barriers"

FP-EV-99-0004, "Configuration of Fire Damper 2-HV-135 in Floor of Auxiliary Building Control Room Air Conditioning Room"

FP-EV-99-0017, "Conduit Penetrations Through Appendix-A Fire Barrier that Separates Control Room and Cable Spreading Room"

FP-EV-99-0021, "Configuration of Fire Damper 2-HV-194 in Auxiliary Building"

FP-EV-00-0009, "Silicon RTV Foam Stop in Fire Barrier Separating Control Room and Operator Break Room (Old Evaluation 135)"

FP-EV-01-0001, "Separation of Unit 1 and Unit 2 Control Rooms"

Fire Prevention Inspections (SFP 10, Rev. 002-04)

Fire Door Inspections (SFP 5, Rev 002-03)

Unit 2 Fire Door Inspection Data Sheets

Fire Extinguisher Inspection and Maintenance (SFP 9, Rev. 000-05)

Unit 2 Fire Extinguisher Inspection Data Sheets

Fire Hose Station Inspection (SFP 2, Rev. 001-05)

Fire Hose Hydrostatic Testing (SFP 4, Rev. 3)

Fire Hose Station Inspection Records

### Permanent Plant Modifications

Plant Changes, DCM 03 Rev 011-03 dated August 8, 2002

Excerpts from MP2 Charging Header Investigation Team Report dated 10/31/02

Operability Determination (OD) MP2-020-02

Millstone Unit 2 Final Safety Analysis Report Chapters 9 and 15

Technical Requirements Manual

ERC 25203-ER-97-0172 - Boron Inventory During Appendix R Cooldown  
 CR-02-08011, CVCS Drain Collection Level Rise  
 CR-02-08026, Active Contaminated Boric Acid Leak and Accumulation on the Floor by  
 "B" Charging Pump  
 CR-00-19725  
 CR-02-05693, The "B" Charging Pump Relay for Backup Starting (Computer Point Z'S  
 929) has Cycled 13 Times Since May 18, 2002, Without Pump Running

#### Post Maintenance Testing

##### "B" DC Switchgear Room Chiller

AWO M2-02-07365, "Chiller Water Pump (P122B) Motor Lower Bearing Inspection"  
 AWO M2-01-15929, "B-Chiller Annual Instrument Calibrations"  
 AWO M2-01-16688, "B-Chiller Heat Exchanger Clean and Inspect"  
 AWO M2-99-11175, "480 MCC Starter Inspection and PM, for Fan F54B" Breaker"  
 AWO M2-00-03111, "480 MCC Starter Inspection and PM, for Chiller X169B"  
 AWO M2-00-11175, "480 MCC Starter Inspection and PM, for Chiller Water Pump  
 P122B"  
 SP 2623A-02, Revision 002-02, "'B' Vital Chilled Water Pump and Discharge Check  
 Valve IST," performed on November 1, 2002  
 MP-20-WP-GDL40, Revision 001, Pre- and Post-Maintenance Testing  
 MP 2701J-096, Revision 7, "Service Water Cooled Heat Exchangers subject to GL 89-  
 13"  
 CR-02-11863, ("B" Vital Chilled Water Pump) Has Greater Than Desirable total  
 Indicating Run-out (TIR) in the Motor Following Alignment Vial M20207365  
 CR-02-11943, MP2 P122B Chilled Water Pump Motor Exhibits Elevated Vibration

##### Atmospheric Dump Valve Positioner Replacement Maintenance

AWO M2-02-00297, SG#1, "Atmospheric Dump Valve Positioner Replacement"  
 CBM-114, Revision 000, "Testing and Adjustment of Air Operated Valves Utilizing Fisher  
 Flow Scanner AOV Diagnostic Test Equipment"  
 SP-2610E, Revision 009-04, "MSIV Closure and Main Steam Valve Operational  
 Readiness Testing"  
 SP-2402F, Revision 006-03, "Atmospheric Dump Valve (ADV) Pressure Controller  
 Calibration"  
 CR-02-13050, NRC Review and Comment on Completed AWO Identified Deficiencies,  
 Incorrect Information and Areas for Improvement  
 CR-02-13085, Test Personnel Performing Flowscans Determined to be Not Qualified in  
 NUTIMS  
 CR-02-13088, Test Personnel Performing Flowscans Determined to be Not Qualified in  
 NUTIMS  
 CR-02-13177, During Review of AWO M2-02-00297 and Documentation (SP-2402F) It  
 was Noted That I&C Administrative Record Keeping Errors were Present

##### "B" Service Water Pump Sodium Hypochlorite Supply Line Maintenance

AWO M2-00-00740, "Change Sodium Hypochlorite Supply Line Plugs Due to the NAOCl Hardening at the Elbow Upstream of Pump Suction 'B'"  
OP-2328A, Revision 014-03, "Sodium Hypochlorite System"

Boric Acid Tank Level Indicator

Boric Acid Tank Level Indicator LT-206 Calibration with IC2429A as post maintenance test for level transmitter replacement per Automated Work Order M2-02-04849

ESAS Power Supply Replacement

SP 2403K ESAS PM and Voltage Calibration, Rev. 001-01  
DBS-2405 ESAS Design Bases Summary  
CR-02-11384 Power Supply Failures Result in Fault on ESAS Actuation Cabinet 5  
AWO M2-02-12789 ACT-5 Power Supply Fuse Failure  
AWO M2-02-12789 Change No. 1 ACT-5 Power Supply Fuse Failure  
AWO M2-02-12789 ACT-5 Power Supply Fuse Failure material list

Diesel Generator Air Supply Vent Solenoid Replacement

CR-02-10202 Failed Air Start Vent Solenoid on "B" EDG  
M2-02-11925 Failed Air Start Vent Solenoid on "B" EDG  
SP 2613L Periodic DG Slow Start Operability Test, Facility 2

### Surveillance Testing

SP 2612B, Revision 008-08, "'C' Service Water Pump Test"  
SP 2606A, Revision 011-03, "Containment Spray Pump Operability and Inservice Testing, Facility 1"  
SP 2606A-001, Revision 014-01, "Containment Spray Pump Operability Test, Facility 1"  
SP 2606C, Revision 9, "CS Header Isolation Operability Test, Facility 1"  
SP 2606A-002, Revision 000-05, "Containment Spray Pump and Check Valve Inservice Testing, Facility 1"  
SP2604A, Revision 012-07, "HPSI Pump Operability and Inservice Testing"  
SP 2403K, Revision 001-01, "ESAS PM and Voltage Calibration"  
OP2304E, Revision 014-01, "Charging Pumps"  
SP 2601G, Revision 011-03, "Charging Pump Operability Test, Facility 1"  
SP 2601I, Revision 001-06, "Charging Pump Inservice Tests"  
SP 2601J, Revision 003-03, "CVCS Check Valve Tests"  
SP 2601K, Revision 000-02, "B Charging Pump Operability and Operational Readiness Tests, Facility 1 and 2"  
OPS Form 2610C-008, Revision 000-02, "2-FW-43A and 2-FW-43B Failure Mode IST"

### Occupational Exposure Control Effectiveness

#### Procedures:

IC 3490B09	Steam Line Radiation Monitor Calibration
RPM 1.6.4, Rev 1	Siemens Electronic Dosimetry System
RPM 2.2.7, Rev 2	REM-500 Operation

RPM 4.1.11, Rev 2	AMS-4 Air Monitoring System
RPM 4.3.7, Rev 4	RO-20 Dose Rate Meter Calibration
RPM 4.7.3 Rev 5	Small Articles Monitor Operation
RPM 4.8.1, Rev 5	Measuring the Radiation Intensity of the J. L. Shepard Calibrator
RPM 4.8.9, Rev 7	Source Checking Health Physics Instruments
SFP 24, Rev 1	Inspection & Inventory of Self-Contained Breathing Apparatus
MP-19-RSP-FAP01.1, Rev 1	Respiratory Protection Authorization

Condition Reports:

M3-00-1666, CR-02-12469, CR-02-12655, CR-02-12016, CR-02-12470, CR-02-11539, CR-02-11758, CR-02-10668, and CR-02-13240

Radiological Protection Department Self-Assessments

MP-SA-02-028, Exposure Control  
MP-SA-02-061, Dosimetry Laboratory Operations

Safeguards

Plant Access Training - Fitness for Duty  
Oversight Audit MP-01-A11, "Security"  
Fitness For Duty Audit MP-02-A0700-04-D  
Security Loggable event report, 01/02-09/02

Other

Student Qualification/Training Status Records for SCBA training

Identification and Resolution of Problems

CR-01-0936, CR-01-06639, CR-01-12047  
Engineering Roles and Responsibilities Rev 1  
MP-SA-01-051 Evaluation of Millstone Manage the Asset (2001) "Conduct of Engineering"  
MP-SA-01-024 Self Assessment: "3RF07 Project Effectiveness"  
MP-03-ENG-REF01 Rev 012 - Engineering Qualifications, Roles and Responsibilities  
MP-SA-01-002 Cross-functional Team effectiveness  
SES-02-004 - Engineering Organizational Issues Engineering Questionnaire  
SES-02-019 – Engineering Questionnaire/Survey Feedback

Event Follow-up

CR-02-01750, CR-02-01537, CR-02-02253, CR-02-05515  
OA 10, Rev 003 - Millstone Station Maintenance Rule Program  
MP-24-MR-FAP710, Rev 000 – Maintenance Rule Functional Failures & Evaluations  
C EN 109, Rev 001 – Inspection of Components Exposed to Boric Acid  
Docket No. 50-423-B16413 – Millstones Nuclear Power Station, Unit No. 3 - 30 Day Response to Generic Letter 97-01



Docket No. 50-423-B16601 – Millstones Nuclear Power Station, Unit No. 3 Response to Generic Letter 97-01

NRC Generic Letter 97-01 - "Degradation of Control Rod Drive Mechanism Nozzle and other Vessel Closure Head Penetrations"

Information Notice 90-10 - "Primary Water Stress Corrosion Cracking of Inconel 600"

LER 2002-001-00 - "Two Reactor Coolant System Pressure Boundary Leakage Events"

d. List of Acronyms Used

AFW	auxiliary feedwater
ASP	accident sequence precursor
AWO	automated work order
CR	condition report
CS	containment spray
EDG	emergency diesel generator
EOOS	equipment out of service
ESAS	engineered safety actuation system
FSAR	Final Safety Analysis Report
HPSI	high pressure safety injection
HRA	human reliability analysis
LER	licensee event report
LPSI	low pressure safety injection
MRFF	maintenance rule functional failure
NEI	Nuclear Energy Institute
OD	operability determination
P&ID	piping and instrumentation diagram
PI	performance indicator
PZR	pressurizer
RCP	reactor coolant pump
RWST	refueling water storage tank
SCBA	self-contained breathing apparatus
SDP	significance determination process
SGFP	steam generator feedwater pump
SOV	solenoid operated valve
SP	surveillance procedure
SRA	senior reactor analyst
SSC	structure, system and component
SWS	service water system
TS	technical specification
URI	unresolved item

**ATTACHMENT 2****RESULTS OF TI 2515/149 MSPI PILOT VERIFICATION - MILLSTONE 2 AND 3****Inspection Requirements**

The inspectors performed Temporary Instruction (TI) 2515/149, "Mitigating Systems Performance Index (MSPI) Pilot Verification," at Millstone on November 4 through 8, 2002. The inspectors verified the MSPIs for the residual heat removal (RHR) system and the cooling water support systems on Unit 1 and the high pressure safety injection (HPSI) system and the cooling water support systems on Unit 2. The results were as follows (paragraph numbers correspond to the inspection requirements sections of TI 2515/149).

03.02 Risk Significant Functions

The licensee did not include all of the functions modeled in their probabilistic risk assessment (PRA) in the appropriate MSPI. The inspectors noted the following specific examples.

- (Unit 2) The licensee credited low pressure safety injection, long term heat removal using shutdown cooling, boron precipitation control, and containment heat removal functions for accomplishing the inventory control and decay heat removal functions within their PRA. However, they only included the containment heat removal function and the associated active components within the scope of the MSPI. Consequently, the system boundary and the list of active components was incomplete.
- (Unit 3) The licensee credited high pressure injection, high pressure recirculation, reactor coolant pump seal injection, and emergency boration functions within their PRA. However, they did not include the high pressure recirculation and reactor coolant pump seal injection functions within the scope of the MSPI. The inspectors concluded that the rationale for including the emergency boration function and not the reactor coolant pump seal injection function was inconsistent.

03.03 Success Criteria

The licensee identified functional-based success criteria versus parameter-based success criteria for the active components as specified in Attachment A to TI 2515/149. Some of the functional success criteria identified for the MSPI were inconsistent with the licensee's PRA. The inspectors noted the following specific examples.

- (Unit 2) The reactor building component cooling water MSPI criteria did not include the isolation of the spent fuel pool heat exchangers and the 2RB210 degassifier, consistent with the PRA.
- (Unit 3) The MSPI criteria for the high pressure injection function of the high pressure injection system specified 1 of 2 high pressure safety injection pumps taking suction from the RWST and injecting into 3 of 3 intact cold legs. However, the PRA specifies that 2 of 4 safety injection/charging pumps injecting from the RWST to 3 of 3 intact cold legs were needed to fulfill this function.

There were differences between the functional success criteria for the MSPI, the licensee's PRA, the NRC's Standardized Plant Analysis Risk (SPAR) model and the NRC's significance determination process (SDP) notebook. The inspectors noted the following specific examples.

- (Unit 3) The SPAR model did not model the charging pump cooling (CCE) and the safety injection cooling (CCI) closed cooling water systems. The SPAR model incorrectly shows the charging systems and safety injection systems as being directly cooled by the service water systems.
- (Unit 2) The SDP notebook did not model low pressure injection for all of the initiating events for which it was credited in the SPAR model and the licensee PRA.
- (Unit 2) The SDP notebook did not model using shutdown cooling for long term heat removal.

#### 03.04 Boundary Definitions

The licensee identified components as being active contrary to the guidance in Attachment A of TI 2515/149. This resulted in monitoring system components that were not required to function to meet the monitored system safety function. The inspectors noted the following specific examples.

- (Unit 3) Containment isolation valves for reactor coolant pump seal injection and chemical and volume control letdown were included as active components even though these components did not affect the HPSI functions.
- (Unit 3) Charging pump recirculation valves were included as active components even though these valves appeared to meet the redundancy guidance in Attachment B (p. F-9) of TI 2515/149.
- (Unit 3) Active components in the boric acid storage tank flow path were included in the HPSI boundary but not in the NEI data sheets. It was not clear why this flow path was included given the HPSI injection/recirculation function. If it was included for a boron injection function for reactivity control (e.g., anticipated transient without scram), then the components were not included in the NEI data sheets. If the flow path did not belong because it did not contribute to the injection or recirculation function, then it should not have been identified in the HPSI boundary.
- (Unit 3) Reactor plant component cooling water (RPCCW) CCE valves (AOV 30A/B and AOV 26A/B) were included as active components even though these valves appeared to meet the redundancy guidance in Attachment B (p. F-9) of TI 2515/149.
- (Unit 3) Valves (MOV-54A/B/C/D) to containment recirculation coolers were included in the service water boundary as active components. However, Attachment A of TI 2515/149 states, "The function of the cooling water support system is to provide direct cooling of the components in the other monitored systems. It does not include indirect cooling provided by room coolers or other HVAC features". It was not clear how isolation valves to containment recirculation coolers affected any of the functions for the monitored systems.

The licensee did not include all active components identified for the monitored train or system in the site-specific NEI spreadsheet. The inspectors noted the following specific examples.

- (Unit 2) Containment sump isolation valves were included in the boundary but not included on the NEI spreadsheet.
- (Unit 3) The RPCCW CCP system boundary description was incomplete. Only the component cooling pumps were included as active components. Valves that must close to isolate non-safety related components to ensure sufficient cooling to the monitored components were not addressed.
- (Unit 3) HPSI recirculation valves from RHR (8804A, 8804B, 8907A, 8907B) were not included as active components. However, Attachment A of TI 2515/149 states, "For plants where the high pressure injection pump takes suction from the residual heat removal pumps, the residual heat removal pump discharge header isolation valve to the HPSI pump suction is included in the scope of the HPSI system."
- (Unit 3) Service water heat exchangers (CCE HX and CCI HX) were not included in the identified service water boundary. However, Attachment A to TI 2515/149, states, "Pumps, valves, heat exchangers, and line segments that are necessary to provide cooling to the other monitored systems are included in the system scope up to, but not including, the last valve that connects the cooling water support system to the other monitored systems. This last valve is included in the other monitored system boundary."

The licensee still had outstanding questions on inclusion of active components within the boundary. The inspectors noted the following specific examples.

- (Unit 2) Reactor building component cooling water valves 2-RB-30.1A/B and 2-RB-37.1A/B were left unresolved as active components. This is an open item left over from the MSPI seminar held in Chicago.
- (Unit 3) Service water valves MOV 115A/B were listed on the boundary drawing as an outstanding question on whether they should be included as active components. Their disposition had not been completed, yet they were listed on the NEI spreadsheets.

### 03.05 Train/Segment Unavailability Boundary Definition

Not all boundaries were consistent with the guidance found in Attachment A of TI 2515/149. The inspectors noted the following specific examples.

- (Unit 2 and Unit 3) Attachment A to TI 2515/149, states, "Pumps, valves, heat exchangers, and line segments that are necessary to provide cooling to the other monitored systems are included in the system scope up to, but not including, the last valve that connects the cooling water support system to the other monitored systems. This last valve is included in the other monitored system boundary." Therefore, service water to emergency diesel generator (EDG) cooling jacket isolation valves should have been monitored under the EDG system versus the service water system. Examples included 2-SW-231A/B and 2-SW-891A/B for Unit 2 and AOV-39A/B for Unit 3.

### 03.06 Entry of Baseline Data - Planned Unavailability

The inspectors identified the following issues with the entry of baseline planned unavailability data.

- Incomplete boundaries precluded validation of NEI data sheets.
- Errors in NEI data sheets precluded validation of data reported to the NRC.
- (Unit 2) Critical Hours were not included on the Service Water NEI spreadsheet.

### 03.07 Entry of Baseline Data - Unplanned Unavailability

The inspectors identified the following issues with the entry of baseline unplanned unavailability data.

- Incomplete boundaries precluded validation of NEI data sheets.
- Errors in NEI data sheets precluded validation of data reported to the NRC.

### 03.08 Entry of Baseline Data - Unreliability

The inspectors identified the following issues with the entry of baseline unreliability data.

- Incomplete boundaries precluded validation of NEI data sheets.
- Errors in NEI data sheets precluded validation of data reported to the NRC.

### 03.09 Entry of Performance Data - Unavailability

The inspectors identified the following issues with the entry of unavailability performance data.

- Incomplete boundaries precluded validation of NEI data sheets.
- Errors in NEI data sheets precluded validation of data reported to the NRC.

### 03.10 Entry of Performance Data - Unreliability

The inspectors identified the following issues with the entry of unreliability performance data.

- Incomplete boundaries precluded validation of NEI data sheets.
- Errors in NEI data sheets precluded validation of data reported to the NRC.

### 03.11 MSPI Calculation

The inspectors identified issues with functions not being included, the list of active components being incomplete, and data errors that resulted in the MSPI calculations being incorrect.

The MSPI Fussell-Vesely (F-V) coefficients were not able to be verified against the licensee's PRA that was qualified for use by the staff because licensee had not identified all of the F-V coefficients and the staff had not qualified the licensee's PRA for use.

The licensee was not able to reproduce the F-V values for train unavailability. Apparently, incorrect F-V values for train unavailability were used. In addition, the FV/UA ratios were not calculated correctly.

Incorrect F-V values for unreliability for several components were used (e.g., 2-CS-16.1A and 2-CS-16.1B, etc.). In addition, the FV/UA ratios were not calculated correctly.

### **General Observations**

While conducting the TI, the inspectors made the following general observations.

- The licensee had not verified the MSPI data submitted to the NRC prior to the submittal in October 2002. At the end of the inspection, numerous errors had been found and the licensee was in the process of verifying the data.
- The licensee had not identified which indicators were invalid; and they were unable to identify which indicators were invalid before the completion of the inspection.

**ENCLOSURE 2**

**U.S. NUCLEAR REGULATORY COMMISSION  
REGION I**

Docket No.: 50-423

License No.: NPF-49

Report No.: 50-423/02-06

Licensee: Dominion Nuclear Connecticut, Inc.

Facility: Millstone Power Station, Unit 3

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

Dates: September 29, 2002 - December 28, 2002

Inspectors: A. C. Cerne, Senior Resident Inspector  
S. M. Schneider, Senior Resident Inspector  
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Approved by: Brian J. McDermott, Chief  
Projects Branch 6  
Division of Reactor Projects



## SUMMARY OF FINDINGS

IR 05000423-02-06; Dominion Nuclear Connecticut, Inc.; on 09/29-12/28/02; Millstone Power Station; Unit 3. Resident Inspection Report

The inspection was conducted by resident and regional inspectors. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector Identified Findings

No significant findings were identified.

B. Licensee Identified Violations

There were no violations identified by the licensee during this inspection.

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## Report Details

### **SUMMARY OF UNIT 3 STATUS**

At the beginning of the inspection period on September 30, 2002, the plant was in Mode 5 (Cold Shutdown) in preparation for restart following substantial completion of activities associated with the eighth refueling outage (3R08). Following the heatup of the plant to normal operating pressure and temperature, operators placed the reactor in Mode 2 (Startup) on October 4, 2002. Criticality was achieved at 9:32 am that day. With the breaker closure connecting the turbine generator to the grid at 3:26 pm on October 7, 3R08 came to a close. On October 11, 2002, operators raised power to approximately 100%. On October 12, 2002, operators made an unplanned power reduction to approximately 75% due to fouling at the intake. Operators subsequently restored the plant to 100% power on October 13, 2002, where it remained through November 26, 2002. Operators controlled the plant at approximately 95% from November 26 through December 3, 2002 to troubleshoot and resolve equipment problems in the moisture separator drains system. Following the equipment restoration operators restored power to 100% on December 3, 2002, where it remained through December 22, 2002. At 01:59 on December 23, 2002, the reactor automatically tripped due to a turbine trip which was caused by a Phase "A" main generator fault. At the end of this report period, on December 28, 2002, operators were maintaining the reactor in Mode 3 (Hot Standby) awaiting identification and repair of the generator problem.

#### **1. REACTOR SAFETY**

##### **Initiating Events, Mitigating Systems, and Barrier Integrity [REACTOR - R]**

###### **1R01 Adverse Weather Protection**

###### **a. Inspection Scope**

The inspectors reviewed the licensee's preparation for adverse weather relative to the protection of safety-related structures, systems, and components (SSCs). The review focused on the protection of emergency diesel generators from cold weather, as well as the licensee's procedures for overall preparedness for adverse weather, which includes high winds, hurricanes, and tornadoes. The inspectors reviewed the licensee's technical specifications, technical requirements manual, the final safety analysis report regarding design features of various SSCs, and the following licensee documents relative to adverse weather preparations and protection:

- AOP 3569, Revision 014, "Severe Weather Conditions"
- C OP 200.6, Revision 001-01, "Storms and Other Hazardous Phenomena (Preparation and Recovery)"
- SP 3670.5, Revision 001, "Cold Weather Protection", and
- Surveillance Form 3670.5-001, Revision 000-04, "Unit Heater Checklist"

###### **b. Findings**

No findings of significance were identified.

###### **1R04 Equipment Alignment**

## .1 Full Equipment Alignment

### a. Inspection Scope

The inspectors conducted a complete walkdown of the emergency core cooling system (ECCS) equipment outside containment that is required to start (e.g., pumps), change position (e.g., valves), or function (e.g., piping flow paths) during the operationally controlled transfer from the safety injection phase to the recirculation phase of ECCS operation following a loss-of-coolant accident (LOCA). Emergency Operating Procedure (EOP) 35 ES-1.3 (Revision 10), "Transfer to Cold Leg Recirculation", was reviewed by the inspectors to determine which systems, equipment, and support components would be examined as part of this ECCS walkdown. The inspectors walked down various flow paths, verifying the condition and status of system components for consistency with the operational Mode 1 position delineated in the system piping and instrumentation diagrams (P&ID), as well as checking the procedural actions directed by the EOP steps for the ECCS alignment logic. The Unit 3 Final Safety Analysis Report (FSAR) was also reviewed to confirm the automatic actuation/positioning of certain EOP equipment based upon the expected accident (e.g., containment depressurization actuation) signals.

In addition to confirming the proper alignment of the active equipment, the inspectors examined several in-line passive components (e.g. pipe supports) for material condition and functionality. The environmental conditions (e.g., area temperatures) to which selected ECCS components were subjected during full power operations were evaluated on a sample basis with respect to both Technical Specification controls and environmental qualification data. Additionally, certain component setpoints (e.g., relief valve nameplate settings) and interlock signal capabilities (e.g., valve limit switch operability) were confirmed to be consistent with the P&ID design details. Where applicable in the EOP directions, power supply availability to the active components was verified, including the inspection of required breaker positions and visual examinations of flexible conduits and other cable and cable raceway conditions.

During the course of this equipment alignment inspection, the inspectors evaluated the licensee assessment of the equipment problems and the recommended corrective actions documented in condition reports (CRs) 02-13251, 02-13279, and 02-13319. The inspectors also reviewed Operability Determination (OD) MP3-024-02, documenting the licensee basis for continued containment recirculation system valve operability, considering the degraded conditions identified in the first two CRs noted above.

### b. Findings

No findings of significance were identified.

## .2 Partial Alignment of "A" Quench Spray System

### a. Inspection Scope

The inspectors verified the correct alignment of the "A" train of the quench spray system following planned maintenance. The inspectors performed the partial walkdown by comparing actual equipment alignment to approved licensee piping and instrumentation

diagram EM-115A, Quench Spray and Hydrogen Recombiner, and operating procedure OP 3309, Quench Spray, to confirm correct system lineup.

b. Findings

No findings of significance were identified.

.3 Partial Alignment of "B" Emergency Diesel Generator

a. Inspection Scope

The inspectors performed a partial system alignment check on the "B" emergency diesel generator (EDG) while the "A" EDG was unavailable for operation during repair activities to resolve a fuel oil leak. The inspectors verified that the "B" EDG was correctly aligned for operation in accordance with the following:

- OP 3346A, Revision 021-01, "Emergency Diesel Generator"
- OP 3346B, Revision 009-03, "Diesel Fuel Oil"
- OP 3326-008, Revision 3, "Emergency Diesel Generator B Service Water System Supply"
- P&ID EM-116C, "Emergency Diesel Generator B Lube Oil & Cooling Water"
- P&ID EM-116D, "Emergency Diesel Generator B Starting Air System"
- P&ID EM-117A, "Emergency Generator Fuel Oil System"
- P&ID EM-133D, "Service Water"

b. Findings

No findings of significance were identified.

.4 Turbine-Driven Auxiliary Feedwater

a. Inspection Scope

The inspectors performed a partial system alignment check on the turbine-driven auxiliary feedwater (TDAFW) system following TDAFW system testing. The inspectors verified that the TDAFW system was correctly aligned for operation in accordance with Surveillance Procedure (SP) 3622.4, Revision 008-02, "Auxiliary Feedwater System Lineup (TDAFW)."

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Auxiliary Building

a. Inspection Scope

The inspectors performed walkdowns three plant fire areas: areas of the auxiliary building housing the "A" and "B" trains of the supplementary leak collection and release system filters (Fire Areas AB-11 and AB-12); and areas of the auxiliary building housing the boric acid tanks, motor control center and rod control area booster pumps and the charging pump cooling surge tank (collectively Fire Area AB-1). The inspectors confirmed that fire detection and suppression equipment located in the areas was as specified in the Millstone 3 Fire Protection Evaluation Report (FPER). The fire fighting strategies for areas AB-11 and -12 were also reviewed to confirm that appropriate fire fighting equipment locations were designated. The licensee's control of transient combustibles and material condition of the areas was assessed. The inspectors noted no compensatory measures (i.e. hourly fire roves) were required to be implemented, in accordance with the Unit 3 Technical Requirements Manual, for degraded or out of service equipment in these areas.

b. Findings

No findings of significance were identified.

.2 Station Blackout (SBO) Emergency Diesel Generator (EDG)

a. Inspection Scope

The inspectors walked down portions of Fire Area SBO-1, which included the SBO EDG enclosure, its associated switchgear enclosures, an interconnecting corridor, a valve pit, exterior portion of the yard and a 3000 gallon fuel oil tank enclosure. The inspectors verified that the fire detection and suppression equipment located in these zones was as specified in the Millstone Unit 3 FPER. During the walkdowns, the inspectors examined equipment, such as emergency lighting units and spray header piping, for evidence of degraded or inoperable conditions and assessed the transient combustible materials stored in the fire area. The Unit 3 condition report historical data base was surveyed to determine if conditions had existed where the cumulative impact of several inoperable or otherwise degraded components impacted the overall capability of the fire protection system in this zone.

b. Findings

No findings of significance were identified.

.3 "A" Emergency Diesel Generator

a. Inspection Scope

The inspectors performed a walkdown of Fire Area EG-3 associated with the "A" Emergency Diesel Generator, following a fuel oil leak that developed during a surveillance run. The inspectors evaluated the fuel oil leak relative to the impact of potential combustion on the ability to maintain safe shutdown capability. In addition, the inspectors verified that the fire detection and suppression equipment located in this area was consistent with and met the requirements of the Millstone 3 FPER.

b. Findings

No findings of significance were identified.

.4 Turbine Driven Auxiliary Feedwater

a. Inspection Scope

The inspectors performed walkdowns of the following plant areas to assess licensee control of transient combustibles and ignition sources, the material condition of reactor plant fire protection systems and features, and the material condition and operational status of fire barriers:

- Turbine Driven Auxiliary Feedwater Pump Area (ESF-5)

The inspectors reviewed the following related licensee documents:

- Unit 3 Fire Protection Evaluation Report
- Unit 3 Fire Area Drawings

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors evaluated the licensee's preparation and protection of the Emergency Diesel Generators (EDGs) from the effects of internal flooding conditions. The inspectors reviewed the FSAR, and various calculations and procedures to determine the efficacy and readiness of protection for the EDGs. The inspectors performed a walkdown of the EDG enclosures, reviewed preventive maintenance records, and interviewed licensee personnel. In addition, the inspectors reviewed the following licensee documents relative to flood protection:

- Automated Work Order M3-97-09999, "EDG Oil Separator Sump 3DNF-SP3 Level Alarm"
- Calculation 12179-P(R)-1073, Revision 0, "Maximum Flood Levels and Effect on Safety Related Equipment in the Diesel Generator Building"
- Calculation SP-3DNF-3, "3DNF-LS3 Actuation Point"

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Licensed Operator Requalification Program Review

Refer to NRC Inspection Report 50-336/02-06, Section 1R11, for specific details.

.2 Licensed Operator Requalification Simulator Exam Observation

a. Inspection Scope

The inspectors observed the conduct of licensed operator requalification simulator training examinations on November 20, 2002. The inspectors observed licensed operator performance relative to the following activities: effective communications, implementation of normal, abnormal and emergency operating procedures, command and control, and technical specification compliance. The inspectors verified that the training evaluators adequately addressed operator performance issues that were identified during the exercise, and that applicable training objectives had been achieved. In addition, the inspectors observed the determination of emergency classifications associated with the exercise (See Section 1EP6.1).

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed licensee actions taken in response to CR 02-11460. This CR was written to document the failure of a safety-related auxiliary building ventilation damper to change position during routine cycling. The inspectors reviewed the auxiliary building system maintenance rule scoping document, corrective actions taken in response to the equipment problem, and maintenance rule functional failure determination.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors verified the conduct and adequacy of maintenance risk assessments for plant conditions affected by the following emergent maintenance activities:

- Unit 3 work schedule for the week of 11/10/02 - charging pump surveillances during unplanned outage of the "A" EDG due to a fuel leak.
- Unit 3 work schedule for the week of 12/15/02 - deferred maintenance activities on the "A" motor-driven auxiliary feedwater (AFW) pump following failed surveillance testing regarding the turbine-driven AFW pump.



In addition, the inspectors compared the results from the licensee's Equipment Out of Service (EOOS) quantitative risk assessment tool for the above plant configurations with the licensee's evaluated risk. The inspectors also verified that the licensee entered appropriate risk categories and implemented risk management actions. In addition, the inspectors reviewed the following related licensee documents:

- Major Equipment Schedule and Plan of the Week
- Control Room Operator Logs
- NUMARC 93-01, Revision 2, Section 11, "Assessment of Risk From Performance of Maintenance Activities"

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

.1 Reactor Startup from Refueling Outage 3R08

a. Inspection Scope

On October 4, 2002, the inspectors observed portions of the reactor startup following refueling outage 8, including the dilution to criticality. The evolution was performed using procedure SP 31008, Low Power Physics Testing. The inspectors assessed control room activities, including licensed operator communication, equipment manipulations using main control board controls, response to alarms, and compliance with approved procedures. In addition, selected procedural prerequisites and precautions were verified before and throughout the startup.

b. Findings

No findings of significance were identified.

.2 Automatic Reactor Trip due to Main Generator Trip

a. Inspection Scope

The inspectors reviewed personnel performance in coping with non-routine evolutions and transients. Specifically, the inspectors reviewed licensee response to an automatic reactor trip that occurred on December 23, 2002, following a main generator trip due to the actuation of ground fault protection relays. The inspectors reviewed operator logs, plant computer data including the sequence-of-events report, emergency response procedures, and the event review team report, to determine whether the operators appropriately responded to the plant conditions following the event and performed actions in accordance with plant procedures.

b. Findings

No findings of significance were identified.

## 1R15 Operability Evaluations

### .1 "B" EDG Operability Following a Fuel Oil Leak on the "A" EDG

#### a. Inspection Scope

The inspectors evaluated the licensee's response regarding operability following the identification of a fuel oil leak from a fuel oil compression fitting on the "A" EDG during a surveillance run on November 13, 2002. The inspectors reviewed the adequacy of the licensee's common cause failure mode evaluation that concluded the "B" EDG was operable and not susceptible to a similar failure mode, which was detailed in technical evaluation M3-EV-02-0037. The inspectors verified that the licensee had entered this issue into the corrective action program for resolution as CR-02-12241.

#### b. Findings

No findings of significance were identified.

### .2 Low Head Safety Injection

#### a. Inspection Scope

The inspectors reviewed operability determination (OD) MP3-019-02, "Portions of the high and low head safety injection test header are pressurized to approximately 1000 psig due to leakage past reactor coolant system check and test header isolation valves." The inspectors verified that the engineering justification for operability was sound, any compensatory actions required were in place, and all applicable technical specifications and technical requirements manual actions were met.

#### b. Findings

No findings of significance were identified.

### .3 Degraded Service Water Piping

#### a. Inspection Scope

The inspectors reviewed the operability determination associated with the degraded service water piping to ensure that operability was justified and that the degraded service water piping remained available and no unrecognized increase in risk had occurred. The inspectors reviewed the following related licensee documents:

- OD-MP3-020-02, "Degraded Pipe Wall Found Downstream of 3-SWP\*TV35A on Spool 3-SWP-32-5-6-3"
- OD-MP3-021-02, "Degraded Pipe Wall Found Downstream of 3-SWP\*V015 (SW Return Line from "A" HVK Chiller)"
- CR-02-11278, Degraded Service Water Pipe Wall Found Downstream of 3-SWP\*TV35A on Spool 3-SWP-32-5-6-3

- CR-02-11279, Degraded Service Water Pipe Wall Was Found Downstream of 3-SWP\*V015 (Return Line for "A" HVK Chiller Condenser)
- RP-5, Revision 002-04, "Operability Determinations"
- Engineering Calculation 02-ENG-01938-M3, Revision 0, Evaluation of Unit 3 Service Water Flow, Line 3-SWP-006-035-3
- TRM 3/4.4.10, Structural Integrity - ASME Code Class 1, 2, 3 Components

b. Findings

No findings of significance were identified.

.4 Source Range Nuclear Instrument Detector Energized At Power

a. Inspection Scope

The inspectors reviewed the operability determination associated with the source range nuclear instrument detector that was energized at power. The inspectors verified that operability of the detector was justified and that no unrecognized increase in risk had occurred. The inspectors reviewed the following related licensee documents:

- CR-02-11882, Source Range NIs Detectors N31 and N32 Energized for Approximately 34 Seconds at 100% Power During SSPS Testing
- RECO/OD MP3-022-02, Both Westinghouse Nuclear Instrument System Source Range Detectors Inadvertently Energized for 34 Seconds at 100% Power During SSPS Testing
- CR-02-11884, NIs Source Range Drawers SR31 and SR 32 Were Inadvertently Energized at 100% Rx Power

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

.1 Cumulative Effects of Operator WorkArrounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of operator workarounds on system reliability, availability and potential for system misoperation. The inspectors also reviewed the cumulative affect of operator workarounds on multiple mitigating systems and the ability of operators to respond to plant transients and accidents. The inspectors reviewed the following related licensee documents:

- CR-02-12615, The process of Identifying, Evaluating, and Reviewing Operator WorkArrounds is not Consistent between Unit 2 and Unit 3
- Millstone Station Performance Indicator Report, Aggregate Impact Performance Indicator
- C OP 200.9, Revision 002, Operational Performance Status

- Operator WorkAround Management Summary
- Millstone Power Station Operational Focus Report
- OP-3260E, Revision 1, Operator WorkArounds

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed a permanent plant modification involving the installation of a fire detection system in the Unit 3 cable spreading room, which was installed under design change record (DCR) M3-01008, "Installation of Incipient Fire Detection System in MP3 Cable Spreading Room." The inspectors reviewed the DCR and various, supporting revisions captured in design change notices (DCNs) to determine the adequacy of the design to perform the intended function of providing an additional, early detection system to supplement existing fire detection systems in the cable spreading room. Additionally, the inspectors verified that the installation did not compromise the integrity of existing fire barriers, as well as existing detection and suppression systems. The inspectors also reviewed the fire-fighting strategy for Fire Area CB-8, cable spreading area, and verified that the credited actions, which include manual actions to be performed in the event of a fire, were not adversely impacted by the design change. The inspectors verified that testing performed subsequent to the installation validated the design objectives and did not adversely impact any aspect of the existing fire protection scheme for the cable spreading room. The inspectors also verified that equipment and training that was planned for installation as detailed in the design change to support the manual fire-fighting activities were completed. The inspectors reviewed various condition reports and validated adverse conditions identified during the design, implementation and testing phases of the modification were appropriately captured in the corrective action program.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the completed documentation for post maintenance testing (PMT) performed in accordance with the following automated work orders (AWOs).

- M3-01-14184 Test and Inspect "A" Service Water Pump Discharge Valve
- M3-01-16271 Replace Output Transistors on Safeguards Driver Boards

The inspectors reviewed the scope of the work activities and verified that the PMT planned and performed was appropriate to restore the operability of the equipment.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors reviewed areas related to the 3R08 refueling outage for conformance to technical specification requirements and approved procedures. Selected activities were verified for the following evolutions:

- Shutdown risk evaluations
- Startup Scheduling
- Plant heatup
- Criticality
- Low power physics testing preparation and results
- Power ascension
- Synchronization of the main generator to the grid

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors reviewed licensee performance related to the following surveillance tests:

- SP 3604A.3, Revision 012-01      3CHS\*P3C Operational Readiness Test (Two Charging Pumps Aligned for Service)
- SP 3626.7, Revision 014-01      Service Water pump 3SWP\*P1D Operational Readiness Test,

The pre-job briefs and testing for both surveillances were observed in the control room to confirm performance of the tests in accordance with approved procedures. The completed data sheets were reviewed to verify the equipment met procedural acceptance criteria and was operable consistent with technical specification requirements. In addition, for the charging pump operational test, the inspectors reviewed its design bases and pump curves to verify the acceptability of the specific acceptance criteria detailed in the surveillance procedure.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors evaluated Temporary Modification (TM) M3-02-010, "Divert Reactor Coolant System (RCS) Check Valve Leakage to the Primary Drains Transfer Tank (PDTT)," which was implemented to eliminate in-leakage to the "C" accumulator. The TM was accomplished under Design Change Notice (DCN) DM3-00-0324-02. This evaluation was conducted to verify that the design bases, licensing bases, and performance capability of any risk significant structures, systems, and components had not been degraded through this modification, and that implementation of the modification did not place the plant in an unsafe or unanalyzed condition. The inspectors attended the site operations review committee meeting where the TM was reviewed and approved, verified a portion of the modified equipment alignment through a control room instrumentation walkdown, inspected a leak rate calculation, reviewed instrument calibration data and assessed licensee technical evaluation M3-EV-02-0036, "Evaluation of Proposed Change to OP 3250.10D to Divert RCS Check Valve Leakage to the PDTT."

b. Findings

No findings of significance were identified.

## **Emergency Preparedness [EP]**

### 1EP6 Drill Evaluation

#### .1 Requalification Training Emergency Classification

a. Inspection Scope

The inspectors evaluated event classifications that occurred during a licensed operator simulator examination conducted on November 20, 2002. The inspectors verified that the simulator training scenario utilized for the examination was of appropriate scope and that the classifications were evaluated against appropriate criteria, consistent with the following documents:

- NEI 99-02, Revision 2, "Regulatory Assessment Performance Indicator Guidelines"
- MP-26-EPA-GDL01, Revision 0, "Emergency Planning Performance Indicators"

b. Findings

No findings of significance were identified.

#### .2 Station Emergency Response Organization

a. Inspection Scope

The inspectors observed the effectiveness of off-hours capability to establish Station Emergency Response Organization (SERO) positions. The following related documents were reviewed:

- CR-02-13223, SERO pager message not received during 12/10/02 Come-In Drill
- CR-02-13224, SERO AMT member did not receive page
- CR-02-13232, Two SERO TSC Reactor Engineers did not receive SERO activation message during 12/10/02 Come-In Drill
- CR-02-13249, SERO Come-In Drill conducted on 12/10/02 did not meet station expectations
- CR-02-13260, All-Call Drill 12/10/02 - Documentation of MP3 Control Room ENRS Software/Telephone Anomaly

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Occupational Radiation Safety [OS]**

2OS3 Radiation Monitoring Instrumentation

Refer to NRC Inspection Report 50-336/02-06, Section 2OS3, for specific details.

**3. SAFEGUARDS**

**Physical Protection [PP]**

3PP1 Access Authorization Program

Refer to NRC Inspection Report 50-336/02-06, Section 3PP1, for specific details.

3PP2 Access Control

Refer to NRC Inspection Report 50-336/02-06, Section 3PP2, for specific details.

**4. OTHER ACTIVITIES [OA]**

4OA1 Performance Indicator Verification

.1 RETS/ODCM Radiological Effluent Occurrences

Refer to NRC Inspection Report 50-336/02-06, Section 4OA1.1, for specific details.

.2 Occupational Exposure Control Effectiveness

Refer to NRC Inspection Report 50-336/02-06, Section 4OA1.2, for specific details.

.3 Safeguards

Refer to NRC Inspection Report 50-336/02-06, Section 4OA1.3, for specific details.

.4 Reactor Coolant System

a. Inspection Scope

The inspectors confirmed the information presented by the licensee for the following performance indicators was complete and accurate:

- Reactor Coolant System (RCS) Activity
- Reactor Coolant System Leakage

To verify the RCS activity Performance Indicator (PI), the inspectors reviewed the results of daily reactor coolant system dose equivalent Iodine-131 measurements for the period of October 2001, through September 2002, as logged in the licensee's chemistry data management system. This time frame was selected as the last confirmation of this PI was performed for data through September 30, 2001.

To verify the RCS leakage PI, the inspectors reviewed the results of daily reactor coolant system identified leakage measurements for the period of October 2001, through September 2002, as logged in the licensee's Unit 3 operations spreadsheet. In addition, selected operator daily surveillance data sheets were reviewed to confirm conformance with the information logged in the spreadsheet. This time frame was selected as the last confirmation of this PI was performed for data through September 30, 2001.

Reported plant information for the PIs was compared against the industry guidance provided by NEI 99-02, Regulatory Assessment Performance Indicator Guideline, and discussed with the licensee analysts responsible for the PIs.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Radiation Monitoring and Respiratory Protection Programs

Refer to NRC Inspection Report 50-336/02-06, Section 4OA2.1, for specific details.

.2 Engineering Department Technical Discipline and Functional Responsibilities

a. Inspection Scope

Corrective actions for CRs related to the assignment of Engineering Department personnel to job related tasks were selected as P&IR sample for review using the guidance in NRC Inspection Procedure 71152. Support materials and references



reviewed as part of this inspection are indicated in Attachment 1 of this report. Also included in this appendix are three condition reports (CRs) in which Dominion addressed the assignment of personnel within the Millstone Engineering Department to cross discipline tasks. The indicated references and associated CRs were reviewed to ensure that the licensee identified deficiencies, established root causes related to events and significant issues and developed/implemented appropriate corrective actions. Inspection activities also included reviewing a selection of Dominion self-evaluations and interviewing engineering department personnel. During interviews with engineering supervisors and engineers, the inspectors discussed the content of weekly Engineering Department meetings and assessed their willingness to report all issues and concerns to Dominion supervision through one or more of the available, Dominion problem identification and reporting avenues.

b. Findings

The inspectors concluded that Dominion's initial actions and overall corrective actions were adequate. No findings of significance were identified.

4OA3 Event Follow-up

- .1 (Closed) Licensee Event Report (LER) 50-423/2002-002-00: Breaker Mechanism Failure Results in Inoperable Emergency Diesel Generator. On December 26, 2001, with Unit 3 operating at full power, the licensee identified that the train "B" emergency diesel generator (EDG) output breaker closing springs had failed to charge after the performance of a routine, monthly EDG surveillance test, which was successfully passed. This condition was determined to render the "B" EDG inoperable. NRC inspection of this event in early 2002 identified the existence of a Technical Specification (TS) violation, in that the inoperable condition existed for a period of 29 hours, which exceeded certain action times specified in TS 3.8.1.1. This event and the follow-up NRC inspection activities were documented in Inspection Report 50-423/01-04, with the noted violation treated as a Non-Cited Violation (NCV 50-423/01-14-01) as a result of the licensee's review and corrective action activities developed with respect to condition report CR-01-12394.

During the current inspection report period, the inspectors reviewed LER 50-423/2002-002-00 to assess the adequacy of the determination of the cause of this event and of the subsequent licensee corrective actions. The inspectors noted an appropriate licensee conclusion that the delay in detecting the "B" EDG inoperability was attributable to both work practice inadequacies and procedural omissions. The corrective measures taken by the licensee to prevent recurrence of this problem addressed both of these concerns and were confirmed by the inspectors to be consistent with the corrective actions specified with respect to CR-01-12394. The identified TS violation was previously documented as an NCV; the licensee appropriately reported this event in accordance with the requirements of 10 CFR 50.73; and the inspectors' follow-up of this issue revealed appropriate analysis and corrective measure implementation. This LER is therefore closed.

4OA5 Other Activities

.1 Temporary Instruction 2515/148 - Interim Compensatory Measures (Security)  
Refer to NRC Inspection Report 50-336/02-06, Section 4OA5.1, for specific details.

.2 Temporary Instruction 2515/149 - Mitigating Systems Performance Index Pilot Verification  
Refer to NRC Inspection Report 50-336/02-06, Section 4OA5.2, for specific details.

4OA6 Meetings, including Exit

.1 Safeguards Exit Meeting Summary  
The inspectors met with Dominion representatives at the conclusion of the inspection on October 24, 2002. At that time, the purpose and scope of the inspection were reviewed, and the preliminary findings were presented. The licensee acknowledged the preliminary inspection findings.

.2 Licensed Operator Requalification Exit Meeting Summary  
The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 5, 2002.

.3 Occupational Exposure Control Effectiveness Exit Meeting Summary  
The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 12, 2002.

.4 Exit Meeting Summary  
The inspectors presented the inspection results to Mr. Alan Price and other members of licensee management on January 27, 2003. The inspectors asked the licensee whether any material examined during this inspection should be considered proprietary. No proprietary information was identified.

**ATTACHMENT 1****SUPPLEMENTAL INFORMATION**a. Key Points of Contact

K. Deslandes	Supervisor, Engineering
S. Garver	Supervisor, Site Fire Protection
S. Heard	(Acting) Director Nuclear Safety & Licensing
P. Parulis	Manager, Nuclear Oversight
S. Smith	Shift Manager

b. List of Items Opened, Closed and DiscussedClosed

50-423/2002-002-00	LER	Breaker Mechanism Failure Results in Inoperable Emergency Diesel Generator (4OA3.1)
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c. Partial List of Documents ReviewedIdentification and Resolution of Problems

CR-01-09361 CR-01-06639 CR-01-12047  
 Engineering Questionnaire  
 Engineering Roles and Responsibilities, Rev 1  
 MP-SA-01-051: Evaluation of Millstone Manage the Asset (2001) "Conduct of Engineering"  
 MP-SA-01-024 Self Assessment: "3RF07 Project Effectiveness"  
 MP-SA-01-002: Cross-functional Team effectiveness  
 MP-03-ENG-REF01 Rev 012: Engineering Qualifications, Roles and Responsibilities  
 SES-02-004: Engineering Organizational Issues, Memorandum dated January 30, 2002  
 SES-02-019: Engineering Questionnaire/Survey Feedback, Memorandum dated May 28, 2002

d. List of Acronyms Used

3R08	eighth refueling outage
AFW	auxiliary feedwater
AWO	automated work order
CFR	Code of Federal Regulations
CR	condition report
DCN	design change notice
DCR	design change record
ECCS	emergency core cooling system
EDG	emergency diesel generator
EOOS	equipment out of service
EOP	emergency operating procedure

FPER	fire protection evaluation report
FSAR	Final Safety Analysis Report
LER	licensee event report
LOCA	loss-of-coolant accident
NCV	non-cited violation
OD	operability determination
ODCM	offsite dose calculation manual
P&ID	pipng and instrumentation diagram
PI	performance indicator
PDTT	primary drains transfer tank
PMT	post maintenance testing
RCS	reactor coolant system
RETS	radiological effluent technical specifications
SBO	station blackout
SDP	significance determination process
SERO	station emergency response organization
SP	surveillance procedure
SSCs	structures, systems, and components
TM	temporary modification
TS	technical specification
TDAFW	turbine-driven auxiliary feedwater