August 2, 2001

Mr. J. Alan Price, Vice President
Nuclear Technical Services - Millstone
C/O Mr. D. A. Smith, Process Owner - Regulatory Affairs
Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, Connecticut 06385

SUBJECT: MILLSTONE UNITS 2 AND 3 - NRC INSPECTION REPORTS 50-336/01-05 AND 50-423/01-05

Dear Mr. Price:

On June 30, 2001, the NRC completed inspections at your Millstone Units 2 & 3 reactor facilities. The enclosed reports document the inspection findings which were discussed on July 26, 2001 with Mr. R. Necci and other 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 two Unit 3 issues of very low safety significance (green). One 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.

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

Sincerely,

/RA/

Curtis J. Cowgill, 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 50-336/01-05
Attachment 1: Supplemental Information
(2) NRC Inspection Report 50-423/01-05
Attachment 1: Supplemental Information

cc w/encl:
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DATE	08/1/01	08/2/01	08/ /01	08/ /01	08/ /01

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ENCLOSURE 1

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket No.:	50-336
License No.:	DPR-65
Report No.:	50-336/01-05
Licensee:	Dominion Nuclear Connecticut, Inc.
Facility:	Millstone Nuclear Power Station, Unit 2
Location:	P. O. Box 128 Waterford, CT 06385
Dates:	May 13, 2001 - June 30, 2001
Inspectors:	S. R. Jones, Senior Resident Inspector, Unit 2 P. C. Cataldo, Resident Inspector, Unit 2 T. A. Moslak, Health Physicist, Division of Reactor Safety (DRS)
Approved by:	Curtis J. Cowgill, Chief Projects Branch 6 Division of Reactor Projects Region I

SUMMARY OF FINDINGS

IR 05000336-01-05; on 05/13-06/30/01; Dominion Nuclear Connecticut, Inc., Millstone Nuclear Power Station; Unit 2.

The inspection was conducted by resident and regional inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

No findings of significance were identified.

B. Licensee Identified Violations

No licensee identified violations were identified.

TABLE OF CONTENTS

Report Details

SUMMARY OF UNIT 2 STATUS

With the exception of turbine control valve testing conducted at 90 percent power on June 2, 2001, the plant operated at 100 percent power throughout the inspection period.

1. REACTOR SAFETY (Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity)

1R04 Equipment Alignment

Partial System Alignment Checks

a. Inspection Scope

Inspectors performed the following partial system alignment checks:

- Following surveillance testing and maintenance work on the "A" service water strainer, L-1A, the inspector verified that the service water header was correctly aligned in accordance with Surveillance Procedure (SP) 2612C-001, "Service Water, Facility 1," and system piping and instrumentation diagram 25203-26008.

- During replacement of a jacket cooling water pump on the "A" emergency diesel generator (EDG), the inspector verified that the "B" EDG was correctly aligned for emergency operation in accordance with SP 2613B-2, "DG Valve Alignment Checklist, Facility 2," and Unit 2 technical specification 3.8.1.1.

- With the cooling system for the lower, 4160 Volt switchgear room out of service for maintenance, the inspector verified that the compensatory measures specified in procedure OP 2315D, "Vital Electrical Switchgear Room Cooling Systems," Rev. 011-04, were correctly implemented and were consistent with Technical Evaluation M2-EV-99-0093, "Compensatory Measures to Use during Loss of Cooling/Ventilation Systems Supporting Vital Switchgear Rooms," Rev. 04. The inspector also verified that the cooling system for the redundant, upper, 4160 Volt switchgear room was correctly aligned and operating to cool the redundant switchgear.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspector reviewed the Millstone Unit 2 Fire Hazard Analysis and Appendix R Compliance Report for the following plant areas: (1) "A" Containment Spray and High and Low Pressure Safety Injection Pump Room, Fire Area A-8A; (2) Containment Recirculation Valve Room, Fire Area A-8B; (3) West Piping Penetration Area, Fire Area A-8C; and (4) West Electrical Penetration Area, Fire Area A-8D; and (5) West Main

Steam Safety Valve Room, Fire Area A-8E. The inspector toured these areas to verify the functionality of installed fire detection devices; the consistency of the actual fire barrier configuration with the evaluated configuration of the fire barriers; the availability of specified manual fire fighting equipment in these and adjacent areas; and the adequate control of transient combustible materials located in these areas.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspector observed the "as-found" inspection of the "C" reactor building closed cooling water (RBCCW) heat exchanger, which was performed in accordance with maintenance procedure MF 2701J-96, "Service Water Cooled Heat Exchangers Subject To GL 89-13." The inspector reviewed the inspection results against the pre-established acceptance criteria contained within the procedure, as well as the adequacy of the heat exchanger inspection periodicity requirements based on the extent of the identified inspection results. The inspector verified that the heat exchanger satisfied all acceptance criteria and that the acceptance criteria were adequate. Although a few small mussels and barnacles were identified, they did not impact the heat exchanger performance capability and the condition was appropriately entered into the licensee's corrective action program.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspector reviewed the licensee's implementation of the maintenance rule for the systems listed below. The inspector verified that scoping tables associated with each system had appropriate performance criteria consistent with the plant configuration, and in accordance with Integrated Maintenance Program, Program Instruction PI-3, "Performance Criteria." The inspector reviewed associated condition reports (CRs) to verify that the identified issues for these systems were correctly evaluated and classified in accordance with Engineering Department Instruction 30710, "Maintenance Rule Functional Failures."

- The turbine-driven pump train of the auxiliary feedwater system and the following associated CRs: M2-00-1613, M2-00-2101, M2-00-2760, M2-00-2856, M2-00-3424, M2-00-3426, CR-01-03649, CR-01-03781, CR-01-04605, CR-01-05220, CR-01-05385, and CR-01-06277. The inspector also verified that the licensee was correctly tracking train unavailability in accordance with their maintenance rule implementation guidelines.

- The service water system, with particular focus on the discharge strainer L-1A, and the following associated CRs: M2-00-3078, M2-00-3107, M2-00-3153, M2-00-3498, CR-01-0034, CR-01-00338, CR-01-00944, CR-01-02476, CR-01-02730, CR-01-03012, and CR-01-05228. The inspector also verified that the licensee was correctly tracking train unavailability in accordance with their maintenance rule implementation guidelines.

- The chilled water system and the following associated CRs: CR-01-00680, CR-01-00705, CR-01-00707, CR-01-00800, CR-01-02196, CR-01-02321, CR-01-04174, CR-01-04249, and CR-01-04825. The inspector also verified that the licensee was correctly tracking train unavailability in accordance with their maintenance rule implementation guidelines.

- The circulating water system and CR-01-04614.

- The screen wash system and CR-01-04910.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

.1 Turbine-Driven Auxiliary Feedwater (TDAFW) Pump Hazard Barrier Control During Maintenance

a. Inspection Scope

The inspector reviewed the licensee's work controls during weld repair activities on the TDAFW pump high energy line break (HELB) door. The welding activities were conducted in accordance with work order M2-01-03934 on May 11, 2001, to address inadequate door sealing issues. The inspector also reviewed technical evaluation M2-EV-99-0002, "High Energy Line Break (HELB) Barrier Opening Time Determination," Revisions 0 and 1, and operating procedure (OP) 2356, "Doors," including their associated safety evaluation screen forms. To facilitate the welding activities, the HELB door was opened for approximately 15 minutes and controlled through guidance contained in OP 2356. The inspector evaluated the safety significance of this issue due to the potential risk associated with a common cause failure of all three auxiliary feedwater (AFW) pumps following a postulated HELB event involving the steam admission line to the TDAFW pump. The inspector verified that the licensee managed risk at an acceptably low level based on the very low probability of a steam line break involving the steam admission line to the TDAFW pump.

b. Findings

No findings of significance were identified.

.2 Troubleshooting Activities For Temperature Channels T-121Y and T-112CB

a. Inspection Scope

The inspector reviewed the licensee's work coordination and controls in support of the troubleshooting activities for the reactor regulating system (RRS) cold leg channel T-121Y, and reactor protection system (RPS) channel "B" cold leg temperature T-112CB. The troubleshooting activities were conducted to identify the cause of unexpected increased temperature indications for the two affected temperature channels. The inspector reviewed the detailed troubleshooting plan implemented through work order M2-01-07593, as well as work orders M2-01-06068 and M2-01-07525, which were utilized for specific testing activities on the two channels. The inspector attended focused planning and review committee meetings that were held prior to the approval of the troubleshooting plan, where the licensee addressed appropriate aspects related to the troubleshooting activity, including worker safety, reactor trip hazards, reactor safety, unexpected plant responses, and other critical factors to be considered during troubleshooting activities. Additionally, the inspector verified that the licensee appropriately assessed and managed the plant's increased risk during the troubleshooting activities, and reviewed the results of the applicable retests following the successful restoration of the affected temperature channels on June 22, 2001. The inspector also reviewed condition reports initiated as a result of identified adverse conditions throughout the troubleshooting planning, execution, and restoration activities.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

.1 Turbine Driven Auxiliary Feedwater (TDAFW) Pump High Energy Line Break (HELB) Door Operability

a. Inspection Scope

The inspector evaluated the licensee's actions following the identification of air gaps in the gasket seating surface for the HELB door that separates the TDAFW pump and the two motor-driven auxiliary feedwater (MDAFW) pumps. Failure of the gasket could prevent the HELB door from fulfilling its safety function and lead to inoperable MDAFW pumps due to a HELB event in the TDAFW pump room. The inspector reviewed the licensee's operability determination (OD) MP2-059-01 and verified that an adequate basis existed regarding operability of the HELB door and the MDAFW pumps. The basis for operability was largely due to the licensee's conservative evaluation that the existing HELB door gap size of approximately 4.5 square inches was less than the maximum acceptable gap size of 5.0 square inches in accordance with guidance contained in procedure U2 EN7, "Unit 2 High Energy Line Break (HELB) Barrier Inspection." Additionally, since the door is credited from a fire protection standpoint, the

licensee determined that the current door design would ensure that the door could perform its function. While the door is not credited from a flood protection perspective, the licensee evaluated the impact of credible flooding events and determined that equipment elevations and available sump and drain systems would continue to provide adequate response to localized flooding.

b. Findings

No findings of significance were identified.

.2 Enclosure Building Filtration System (EBFS) Filter Operability

a. Inspection Scope

The inspector evaluated operability determination MP2-068-01, which was initiated following the licensee's identification that paint applied to the interior surfaces of the "A" train EBFS filter housing L-29A was not qualified for the harsh environments that would be expected during post-accident conditions. Failure of the paint could challenge the ability of the EBFS to perform its intended function by blocking air flow through filter beds, which could result in higher off-site doses to the public. The inspector verified that an adequate basis existed for continued operability of the EBFS filter units, in that the air velocity is too low to entrain paint flakes.

b. Findings

No findings of significance were identified.

.3 Quality of Internal Parts Installed in the "B" Auxiliary Feedwater Pump

a. Inspection Scope

The inspector evaluated operability determination MP2-033-00, which was initiated to address concerns described in condition report M2-00-2760 regarding the quality of internal parts installed in the "B" auxiliary feedwater (AFW) pump. The inspector verified that adequate basis existed for continued operability of the "B" AFW pump, in that:

(1) Original parts that had caused failure of similar pumps, as described in NRC Information Notice 88-87, had been replaced by qualified components.

(2) Although some impeller stages were replaced based on indications of minor cracking, operational experience and impeller inspections have demonstrated impeller integrity.

(3) Components had been purchased under an appropriate quality assurance program or conformed with the vendor's original specifications and had been upgraded under the licensee's quality assurance program.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

.1 "A" Service Water (SW) Pump Discharge Strainer Testing

a. Inspection Scope

The inspector reviewed post-maintenance test results following inspection and maintenance work on the "A" SW pump discharge strainer L-1A, which was performed under work order M2-00-17398. The test was conducted in accordance with surveillance procedure SP 2612A-1, " 'A' Service Water Pump Operability Test." The inspector reviewed the test data and verified that the post-maintenance tests adequately demonstrated that the L-1A strainer would continue to perform its required safety function.

b. Findings

No findings of significance were identified.

.2 "C" Reactor Building Closed Cooling Water (RBCCW) Pump Surveillance

a. Inspection Scope

The inspector reviewed in-service testing (IST) and operability surveillance testing results following maintenance associated with the "C" RBCCW pump, which was conducted under work order M2-00-15190. The post-maintenance testing was performed in accordance with surveillance procedures SP 2611B-1, "'C' RBCCW Pump Operability Test," and SP 2611B-2, "'C' RBCCW Pump IST." The inspector reviewed the test data and verified that the post-maintenance test was adequate given the scope of the maintenance activities, and provided adequate assurance that the "C" RBCCW Pump would continue to perform its required safety function.

b. Findings

No findings of significance were identified.

.3 "C" Charging Pump Maintenance

a. Inspection Scope

The inspector reviewed post-maintenance testing associated with the replacement of the "C" charging pump discharge check valve, 2-CH-334. The check valve replacement was initiated following the licensee's determination that the check valve had experienced internal spring failure and seat damage. The inspector reviewed the valve replacement work order M2-01-05591, which included applicable post-maintenance testing. The post-maintenance test was performed in accordance with surveillance procedure SP 2601J-1, "Charging Pumps Discharge Check Valve IST, Two Pump Test." The inspector reviewed the test data and verified that the post-maintenance tests were adequate given the scope of the activities and provided adequate assurance that the check valve would continue to perform its required safety function.

b. Findings

No findings of significance were identified.

.4 "A" Reactor Building Closed Cooling Water Pump Maintenance

a. Inspection Scope

The inspector reviewed work order M2-01-00840, which involved the replacement of the "A" reactor building closed cooling water (RBCCW) pump outboard mechanical seal, and the associated post-maintenance testing. The post-maintenance test was performed in accordance with surveillance procedure SP 2611A-3, "'A' RBCCW Pump IST," and included a seal leakage acceptance criterion from maintenance procedure MP 2703L6, "Chesterson 442 Split Mechanical Seal Installation and Replacement." The inspector verified that the test data from the inservice test satisfied the associated acceptance criteria, the licensee established an acceptable basis for operability when the leakage criterion was exceeded, the post-maintenance testing was adequate for the scope of the maintenance, and the testing provided adequate assurance that the pump would perform its required safety function.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

.1 Containment Tendon In-Service Inspection (ISI) Surveillance

a. Inspection Scope

The inspector observed a tendon lift-off pressure test for containment tendon 12V7 conducted on June 1, 2001. The surveillance test was conducted by a contractor and performed in accordance with Precision Surveillance Corporation (PSC) procedure SQ 9.0, "Monitoring of Tendon Force (Lift-Offs)," and consistent with Millstone's surveillance procedure SP 21140, "Containment Post-Tensioning System Surveillance."

The inspector verified that test results satisfied the applicable technical specification acceptance criteria, which ensured the tendon was tensioned to an appropriate force such that containment structural integrity was met and that the containment was capable of performing its intended safety function.

b. Findings

No findings of significance were identified.

.2 Incore Detector Operability Surveillance

a. Inspection Scope

The inspector reviewed the results of the incore detector operability surveillance conducted in accordance with SP 21019, "Incore Detector Operability." The inspector verified that the test results satisfied the acceptance criteria of the surveillance procedure and the Technical Requirements Manual Section II.4.3, and that the appropriate number of detectors necessary to continue reactor operation were operable and performing their intended safety function.

b. Findings

No findings of significance were identified.

.3 Reactor Trip Circuit Breaker (TCB) Surveillance

a. Inspection Scope

The inspector observed preliminary work activities in preparation for testing the trip shaft torque values of the eight reactor TCBs. The testing is required based on historical issues associated with the failure of TCBs to trip when required due to hardening of grease, and to meet the requirements of NRC Generic Letter 83-28. The tests were conducted on June 29, 2001, in accordance with maintenance procedure MP 2701J-001, "Trip Circuit Breaker Maintenance." The inspector verified that test results satisfied the acceptance criteria of the surveillance procedure, were consistent with the guidance in GL 83-28, and adequately demonstrated the ability of the TCBs to perform their intended function.

b. Findings

No findings of significance were identified.

.4 Turbine Driven Auxiliary Feedwater (TDAFW) Pump Trip Throttle Valve Surveillance

a. Inspection Scope

The inspector observed the performance of a surveillance test on the TDAFW pump steam supply trip throttle valve, SV-4188, conducted on April 4, 2001. The valve exercise test was performed in accordance with SP 2660, "Auxiliary Feedwater Pump Turbine Periodic Testing." The inspector verified that test results satisfied the acceptance criteria of the surveillance procedure and the requirements of technical specifications, and that performance of the test adequately demonstrated equipment operability and capability to perform the intended safety function.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Occupational Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

During the period June 11 - 14, 2001, the inspector evaluated the licensee's activities in implementing their physical and administrative controls for access to locked high radiation areas and other radiologically controlled areas, and the workers' adherence to these controls when working in these areas.

Independent radiation surveys were performed in the radiologically controlled areas in Unit 2 and Unit 3 to confirm the accuracy of posted survey results, and assess the adequacy of radiation work permits and associated controls. Keys to Technical Specification Locked High Radiation Areas were inventoried for both units and these areas were verified to be properly secured and posted during plant tours.

The inspector attended pre-job briefings and reviewed the exposure controls specified in the Radiation Work Permits (RWP) for the following jobs-in-progress:

Unit 2, Corrective Maintenance on B-Charging Pump, RWP-30
Unit 3, Inspection of Spent Fuel Assembly Top Nozzle Springs, RWP-24
Unit 2 & 3, General Clean-up of Unit 2 &3 radiological controlled areas, RWP-50

For these tasks, the inspector observed selected aspects of the work activity and interviewed workers on their knowledge of the relevant RWP, electronic dosimetry setpoints, and job site radiological conditions.

The inspector reviewed selected Condition Reports (CRs) relating to the control of personnel exposure and work activities in radiologically controlled areas to evaluate the

licensee's threshold for identifying problems regarding the implementation of the radiation protection program, and the promptness and effectiveness of the resulting corrective actions. Additionally, CRs were evaluated against the criteria contained in 10 CFR 20, Technical Specifications, and site procedures to determine the regulatory significance of the identified problem. Included in this review were CRs 2468, 2899, 3343, 3856, 3847, 4181, 4246, 4785, and 6213.

In evaluating the effectiveness of the licensee's problem identification and resolution program, the inspector reviewed Nuclear Oversight Department Field Observations addressing radworker practices, a critique of performance issues identified during the recently completed Unit 3 refueling outage, and two Radiation Protection Department self-assessments addressing the radiation worker training program (MP-SA-01-074) and radworker human performance trends (NP-SA-01-075).

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

Emergency AC Power System Unavailability

a. Inspection Scope

The inspector reviewed system engineer unavailability data and various corrective action program records (condition reports) for the Unit 2 emergency diesel generators for the period from July 1, 2000, through March 31, 2001. The inspector verified that the licensee's unavailability data was consistent with reported values submitted to the NRC and that the methodology used in collecting and evaluating the data was consistent with industry guidance.

b. Findings

No findings of significance were identified.

4OA5 Other

.1 (Closed) LER 50-336/1999-015-01: The issue addressed by this LER was inspected in NRC Inspection Report (IR) 50-336/1999-09, and LER 50-336/1999-015-00 was closed in IR 50-336/2000-001. This LER supplement added additional examples where the operating procedure for plant cooldown did not identify expected actuations of the reactor protection system, but the identified corrective actions remain acceptable. Therefore, this LER is administratively closed.

4OA6 Meetings, including Exit

Resident Inspector Exit Meeting

The inspectors presented the inspection results to the Vice President -Nuclear Operations - Millstone and other members of licensee management at the conclusion of the inspection. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any material examined during this inspection should be considered proprietary. No proprietary information was identified.

Regulatory Performance Meeting

On May 22, 2001, the Director, Division of Reactor Projects met onsite with representatives of Dominion Nuclear Connecticut, Inc., to discuss their response to the issues relating to the mitigating systems degraded cornerstone, as well as cross-cutting concerns related to human performance and corrective action implementation.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

a. List of Items Opened, Closed and Discussed

Closed

50-336/1999-015-01	LER	Unanticipated Reactor Protection System Trip Signal Generation On Low Steam Generator Level

b. Partial List of Documents Reviewed

RWP-9	NRC Inspections in Unit-2 & 3 Radiologically Controlled Areas
RWP-24	Unit 3 Fuel Assembly Top Nozzle Spring Inspections in Spent Fuel Pool
RWP 30	Corrective maintenance on Unit 2B-Charging Pump piping
RWP-50	Clean up of Unit 2 & 3 radiological controlled areas
SA-01-074	Radiation Worker Training Program/Radworker Practices
SA-01-075	Human Performance assessment of Radiation Protection & Waste Services Staff
3RO7	ALARA Report & Unit 3 Cycle 7 Summary
RPM 1.3.8	Criteria for Dosimetry Issue, Rev 006
RPM 1.3.14	Personnel Dose Calculations and Assessments, Rev 005
RPM 1.4.1	ALARA Reviews and Reports, Rev 004
RPM 1.4.2	ALARA Engineering Controls, Rev 001
RPM 1.5.1	Routine Survey Frequency, Rev 007
RPM 1.5.2	High Radiation Area Key Control, Rev 004
RPM 1.5.5	Guidelines for Performance of Radiological Surveys, Rev 003
RPM 1.5.6	Survey Documentation and Disposition, Rev 003
RPM 2.1.1	Issuance and Control of RWP's, Rev 004
RPM 2.1.2	ALARA Interface with the RWP Process, Rev 001
RPM 5.2.2	Basic Radiation Worker Responsibilities, Rev 009

Field Observation Reports:

FOQC-01-022, 5/03/01
FOQC-001-04, 2/23/01
MPS-MA-01-001-04, 3/01/01
MPS-MA-01-001-05, 3/01/01
MPS-MA-01-001-03, 2/22/01

Self-Assessment: Radiation Worker Training Program (MP-SA-01-074)
Self-Assessment: Radworker Human Performance (NP-SA-01-075)

c. List of Acronyms Used

AFW	auxiliary feedwater
CRs	condition reports
EDG	emergency diesel generator
EBFS	enclosure building filtration system
HELB	high energy line break
IR	inspection report
ISI	in-service inspection
IST	in-service testing
MDAFW	motor-driven auxiliary feedwater
OD	operability determination
PSC	Precision Surveillance Corporation
RECO	reasonable expectation of continued operability
RBCCW	reactor building closed cooling water
RPS	reactor protection system
RRS	reactor regulating system
RWP	radiation work permit
SP	surveillance procedure
SW	service water
TCB	trip circuit breaker
TDAFW	turbine driven auxiliary feedwater

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket No.: 50-423

License No.: NPF-49

Report No.: 50-423/01-05

Licensee: Dominion Nuclear Connecticut, Inc.

Facility: Millstone Nuclear Power Station, Unit 3

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

Dates: May 13, 2001 - June 30, 2001

Inspectors: A. C. Cerne, Senior Resident Inspector, Unit 3
B. E. Sienel, Resident Inspector, Unit 3
K. S. Kolaczyk, Reactor Inspector, Division of Reactor Safety (DRS)
T. A. Moslak, Health Physicist, (DRS)

Approved by: Curtis J. Cowgill, Chief
Projects Branch 6
Division of Reactor Projects
Region I

SUMMARY OF FINDINGS

IR 05000423-01-05; on 05/13-06/30/01; Dominion Nuclear Connecticut, Inc., Millstone Nuclear Power Station; Unit 3. Maintenance Risk Assessments and Emergent Work Evaluation, Temporary Plant Modifications, Event Follow-up.

The inspection was conducted by resident and regional inspectors. The inspection identified two green issues, one of which was a Non-Cited Violation, and one unresolved item. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings and Violations

Cornerstone: Mitigating Systems

- **Green.** The inspectors identified a Non-Cited Violation for failure to implement appropriate corrective action (10 CFR Appendix B Criterion XVI) after the licensee identified that piping leaks on service water strainer blowdown lines, originally identified during a first quarter 2001 refueling outage, should have been repaired before unit restart at the end of March.

  This finding was of very low safety significance because although the NRC review determined that additional corrective measures (i.e., procedure revisions) were necessary to address concerns for problem recurrence for adequate operability determinations, the structural integrity for the service water piping had been maintained. (Section 1R13)

- **Green.** The licensee's implementation of a temporary plant modification with an improper work control review resulted in a period of turbine-driven auxiliary feedwater system inoperability. Subsequent NRC review identified that the process controls for the modified system alignment had inadequately evaluated the potential for causing a safety system to be declared inoperable.

  This finding was of very low safety significance because of the short duration of the inoperability and the availability of the redundant auxiliary feedwater components and flowpaths, which remained unaffected by this event. (Section 1R23)

B. Licensee Identified Violations

Cornerstone: Mitigating Systems

- **TBD.** An apparent violation of Technical Specification 3.6.2.1, Containment Quench Spray System, involving the failure to adequately verify the position of quench spray system discharge valves, was identified in LER 50-423/2001-001.

  The safety significance of the finding is under review, and the apparent violation is being treated as an unresolved item. (Section 4OA3.1)

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Report Details

SUMMARY OF UNIT 3 STATUS

The plant operated at approximately 100 percent power throughout the inspection period.

1. REACTOR SAFETY
(Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity)

1R04 Equipment Alignment

a. Inspection Scope

With one of the two "A" train service water (SWP) system pumps taken out of service for planned maintenance, the inspector performed a partial walkdown of the protected "B" train SWP system; including both pumps, 3SWP*P1B & P1D, associated flow paths, piping components, and electrical support equipment. The service water system is the third highest ranking system relative to the function performed contributing to the prevention of core damage at Millstone Unit 3. The inspector reviewed the SWP piping and instrumentation drawing EM-133A and the system operating procedure OP3326 to verify the correct system lineup.

Subsequently, to support the operational test for the restoration of the "A" train SWP pump with pump 3SWP*P1B already in service, pump 3SWP*P1D was also started to carry both turbine plant component cooling heat exchangers, with the "A" train isolated from these non-safety loads. During this evolution, the inspector conducted an additional field check of the "B" train SWP system configuration and verified the procedural controls specified in the surveillance procedure (SP) 3626.6 for the 3SWP*P1C Operational Readiness Test. The Archived Operator Log was also reviewed to confirm that the sequence of pump starts and operator actions were consistent with both the procedural controls and the applicable Technical Specification action statements. The inspector noted that during the conduct of the 3SWP*P1C pump surveillance, a discharge pressure instrument isolation valve leak was identified and properly documented in Condition Report CR-01-05788.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspector performed a walkdown of the areas of the fuel building (FB) housing the spent fuel pool cooling pumps and associated valves and heat exchangers (collectively Fire Area FB-2); as well as, a walkdown of both battery rooms (Fire Areas CB-3 & CB-5) housing the 125 volt-dc batteries 1 and 3 of the protected "A" train. The inspector confirmed that fire detection and suppression equipment located in the areas were as specified in the Millstone Unit 3 Fire Protection Evaluation Report (FPER). A discrepancy between the FPER description of FB-2 drainage and actual plant layout

was discussed with the fire protection engineer. Condition Report CR-01-06837 was written to correct the issue. For the battery room fire detection system, the inspector also verified the zone monitoring devices and common alarm panel configuration to be in conformance with the governing system operating procedure, OP 3341D. The inspector noted no degraded or out-of-service equipment in these areas which would have required compensatory measures (i.e. hourly fire roves) in accordance with the Unit 3 Technical Requirements Manual.

The inspector also conducted an inspection-tour of the Millstone fire pump houses, containing the two electric-motor driven and one diesel-engine driven fire pumps, along with the electric jockey pump maintaining the fire water supply system pressure, and associated valves and piping connected to the two site fire water tanks. The fire protection features, separation, and shared piping layouts for these area were examined. The inspector confirmed that the observed configuration of the site fire water supply system was as described in the Unit 3 FPER, noting one discrepancy regarding the remote manual start capability of the three fire pumps. The licensee documented this issue in a Condition Report CR-01-07285, similar to the manner in which other, previously identified FPER discrepancies (e.g., CR M3-00-2313) had been handled. As a result of the latter CR, during this inspection period, the licensee conducted a survey of twelve separate Fire Areas to check consistency with their associated descriptions in the FPER. Additional walkdowns of several Fire Areas for equipment inspections have also been scheduled by the licensee.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspector reviewed licensee actions taken in response to the following condition reports (CRs) related to the safety-related turbine driven auxiliary feedwater (TDAFW) pump:

- CR-01-3084 TDAFW Pump Failed Surveillance
- CR-01-03301 TDAFW Pump Failed Start Time Criteria

The inspector reviewed the auxiliary feedwater system's first quarter 2001 system health report, corrective actions taken in response to the equipment problem, and maintenance rule functional failure determinations for both CRs. The inspector confirmed that the licensee appropriately tracked the occurrences against the system's performance criteria, both for functional failures and unavailability time.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspector noted that the licensee had calculated a "yellow" online risk condition in the evaluation of testing and maintenance on one train of the engineered safety feature building ventilation in conjunction with control building chiller work and other planned maintenance in the same train. The inspector independently verified, through use of the licensee's online risk tool, that the condition was in fact yellow. In addition, this condition was discussed with the online risk reviewer. The inspector determined that the licensee was aware of the online risk condition and appropriately limited the time the plant remained in this condition.

Additionally, the inspector evaluated the licensee's corrective action response and repair activities for service water leaks on the common pipe header for the "A" train service water (SWP) strainer blowdown lines. The leaks were initially identified by the licensee in February 2001, as documented in CR-01-02157, with the plant shutdown for the conduct of a refueling outage, 3R07. While the licensee initially planned to conduct the repairs to this ASME Code Class 3 piping in August 2001, the licensee subsequently identified on May 21, 2001(CR-01-05427) that the repairs should have been completed prior to the unit restart from 3R07, in accordance with the guidance of USNRC Generic Letter 90-05, which is referenced in the Millstone Station functional administrative procedure MP-24-ENG-FAP947, "Non-Code Repairs in Safety Class 3 Piping." Furthermore, this procedure requires that a prompt repair be initiated upon discovery of a leak, if a code repair is practical.

On May 24, 2001, the licensee issued an operability determination (OD) MP3-048-01, which indicated that the subject SWP piping remained operable with the identified leaks, based upon structural integrity calculations, but classified the line as not fully qualified, requiring compensatory nondestructive testing (NDT) to ensure continued operability. An automated work order, AWO M3-01-05271, was issued to replace the degraded piping. The repair activities restoring the "A" SWP train to a fully qualified and operable status were completed on June 20, 2001.

b. Findings

The inspector noted that from March 2001, when the "A" SWP was required to be operable and fully qualified as the plant started up from 3R07, until May 24, 2001, when OD MP3-048-01 was issued with its defined compensatory measures, the subject leaking piping existed in a degraded condition, without the necessary compensatory NDT. This occurred because the operability assessment done for the original CR-01-02157, was inadequate, also indicating inadequate initial corrective actions for the identified deficiency.

The inspector evaluated this condition using the NRC's Significance Determination Process because of the potential impact upon the operability of a support system ("A" SWP) for several Unit 3 mitigating systems. The NRC concluded that the condition was of very low safety significance (Green) because structural integrity for the SWP piping had been maintained. However, the inspector also identified that a violation of 10 CFR 50, Appendix B, Criterion XVI, was in evidence in that a condition adverse to quality was not promptly corrected. Additionally, the inspector noted that the licensee corrective measures had not initially considered the need for procedural changes to programmatically address the identified code-repair concerns. After discussions with the NRC with respect to the need to implement measures to preclude problem recurrence in the future, the licensee determined that procedural revisions were appropriate. As a result of this determination, the tasks specified in condition report, CR-01-05427, and corrective actions subsequently implemented by the licensee, this violation is being treated as a Non-Cited Violation **(NCV 50-423/01-05-01)** consistent with Section VI.A of the NRC Enforcement Policy, NUREG-1600.

1R19 Post Maintenance Testing

a. Inspection Scope

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

- M3-99-17465 Calibration of service water pressure header "A" instrument loop
- M3-00-16707 Calibration of time delay relay associated with control room ventilation
- M3-01-12990 Piping replacement and welding to repair a service water system leak in the discharge line from the "A" train CCE heat exchanger

The inspector reviewed the scope of the work activities and verified that the PMTs planned and performed were appropriate to restore the operability of the systems. During the course of the review of the first two AWOs, the inspector discussed the work packages with the responsible process owner and test technician, respectively. For the welding activities, the inspector also verified the conduct of nondestructive examination and pressure testing of the completed welds in accordance with ASME Section XI code requirements.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspector reviewed licensee performance related to the following surveillance tests.

- SP3623.1 Turbine Testing [Section 4.6, Stator Coolant Pump AUTO-Start Test (Weekly)]

- SP3614I.1 Supplementary Leak Collection and Release System (SLCRS) Operability Test

The stator coolant pump start testing was observed following corrective maintenance performed on snubbers in the system. Snubber clogging was determined to be the cause of recent, minor turbine runbacks. Therefore, while this surveillance activity was not a required technical specification test, the conduct of the testing could have resulted in further, more serious turbine runbacks, possibly leading to a manual or automatic reactor trip. The turbine generator testing was observed in the control room to confirm operator awareness of potential test outcomes, readiness to respond to turbine runbacks, as well as performance of the test in accordance with approved procedures. The inspector confirmed that the test was performed satisfactorily, with no abnormal system response.

For the SLCRS operability test, the inspector verified the “B” train test preparations in the control room and reviewed the surveillance test requirements relative to the system operating procedure (OP 3314I) precautions and provisions for aligning the “B” train of SLCRS for automatic operation. The inspector also confirmed that the appropriate Technical Specification 3.6.6.1 actions were documented for the period of time involving the inoperability of specific “B” train SLCRS ventilation fans, while preventive maintenance was being performed on the motor control center breakers supplying power to the affected fans. Field inspections checked that proper tagging controls were being implemented for the work activities that removed the SLCRS equipment from service.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspector reviewed Temporary Modification (TM) 3-01-025, which was approved by the licensee for the purpose of allowing non-safety condensate system outage work to proceed with the plant on line. The TM details provided an alternate means of removing condensate from the safety related Turbine Driven Auxiliary Feedwater (TDAFW) pump steam supply lines, in order to maintain operability of the TDAFW pump with the steam trap drain flow paths routed away from the systems taken out of service.

When the licensee implemented this TM on June 18, 2001, it was discovered that an error in the method of isolating the non-safety related steam trap bypass valves caused a higher volume of steam discharge than was planned for the temporary quench tank system set up by the TM. After the licensee isolated the unexpected steam flow by closing the safety-related isolation valves upstream of the steam trap portion of the drain piping, the inspector conducted a field walkdown of the permanent piping and temporary quench system configuration associated with TM 3-01-025. The inspector also reviewed the condition report (CR-01-06369) documenting this event, the operations shift log detailing the chronology of events, and the administrative procedure (WC 10, Rev. 003-02) for the control of Temporary Modifications.

b. Findings

Subsequent review of this event by the licensee revealed that the initial error was the failure to recognize that the attempt to secure the steam trap bypass valves in a closed position, by pulling the power supply fuses, de-energized the valves to a fail-open mode. While this error alone had no direct impact upon the operability of the TDAFW pump, the licensee was required to isolate the resultant steam leak by closing the TDAFW pump's steam supply connection to its trap/condensate removal capability.

Therefore, after four hours in this condition, in accordance with Technical Specification 3.7.1.2, the TDAFW pump was declared inoperable and remained so for approximately five hours. The TDAFW system operability was restored when the temporary piping configuration of TM 3-01-025 was isolated and the steam traps were blown down and returned to service to restore the condensate removal capability of these lines.

The inspector determined that the licensee's work control process had not assessed the effect of the TM controls and the design features of specific non-safety-related valves sufficiently, to preclude the unexpected opening of these valves from subsequently causing the inoperability of the TDAFW system.

The inspector evaluated this condition using the NRC Significance Determination Process because this event and the resultant conditions adversely affected the mitigation function provided by the auxiliary feedwater (FWA) system, with the TDAFW pump inoperable for this five-hour period. The inspector concluded that the condition was of very low safety significance (Green) because of the short duration of the TDAFW inoperability and the availability of the redundant FWA components and flow paths, which remained unaffected by this event. No violation of NRC requirements was identified. **(FIN 50-423/01-05-02)**

2. RADIATION SAFETY

Occupational Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas

Refer to NRC Inspection Report 50-336/01-05, Section 2OS1 for specific details.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

a. Inspection Scope

The purpose of this inspection was to confirm the information presented in the licensee's March 2001 Unplanned Power Changes per 7000 Hours Critical performance indicator (PI) was complete and accurate. The inspector reviewed selected operator logs, plant process computer data, and licensee monthly operating reports for the period October 1, 2000, through March 31, 2001. This time frame was selected because the last confirmation of this PI was performed for data through September 30, 2000.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 (Closed) LER 50-423/2001-001: Quench Spray System Manual Valve Misalignment

The inspector conducted an in-office review of a February 1, 2001, event where the licensee discovered the discharge valves on the "A" and "B" Quench Spray System (QSS) pumps in the locked closed position, vice the required locked open position. The mis-positioned valves (3QSS*V945 and 3QSS*V946) were twelve-inch, manually operated butterfly valves. The licensee investigation concluded the improper valve alignment had probably existed since the start of commercial plant operation in 1986.

The licensee determined that valves 3QSS*V945 and 3QSS*V946 were originally installed in the QSS as motor operated valves (MOVs) that were designed to close when a low level was reached in the Refueling Water Storage Tank (RWST). QSS flow to the containment would then continue via two six-inch lines that bypassed the valves until the RWST was empty. However, operation of the QSS system was changed during plant construction by adding an automatic trip to the QSS pumps when the RWST was drained. As a result, the need for the valve closure logic was eliminated. Accordingly, the licensee removed the MOVs, and in their place installed the manual butterfly valves. However, during the installation process, workers incorrectly set the individual valve position indicators so they depicted the valves as open when in fact they were closed. The incorrect valve position was not detected during the monthly QSS pump surveillance tests because enough flow to demonstrate pump operability passed through the six-inch bypass lines.
The licensee's assessment of this event concluded the valve mis-positioning was not risk significant since the six-inch bypass lines around valves QSS*V945 and V946

allowed 91 percent of the QSS flow assumed in the accident analysis to reach the containment structure. Therefore, the system would satisfy all of its intended safety functions which included containment heat removal, fission product cleanup, and establishment of sufficient containment water sump level to support operation of the containment Recirculation Spray System (RSS). This conclusion was outlined in LER 50-423/2001-001, "Quench Spray System Manual Valve Misalignment," dated March 30, 2001, which reported the event to the NRC per 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by technical specifications, and 10 CFR 50.73(a)(2)(vii) as common cause inoperability of independent trains.

To review this event, the inspector examined LER 50-423/2001-001, the licensee's engineering technical analysis of the event, the Unit 3 Final Safety Analysis Report (FSAR) and plant Technical Specifications (TS). Where possible, the inspector prepared independent calculations to validate assumptions and verify results. Finally, the inspector performed a field walk down of portions of the QSS to verify system drawings reflected the as-installed configuration.

The licensee's technical analysis of the event assumed the QSS pumps were not degraded and were operating on their original pump hydraulic curve. The inspector examined the QSS pump curves and recent surveillance data and concluded the licensee's assumption was reasonable, that the pumps had not degraded, and were operating at their optimum design point. QSS flow calculations were found to accurately model system flow losses caused by system fittings, internal roughness and pipe lengths. Input assumptions including containment volume and spray area matched FSAR values and design specifications. The inspector agreed with the licensee's conclusion that the mis-positioned valves did not significantly reduce the amount of QSS flow to the containment structure.

To assess the offsite dose consequences, the licensee used an analysis methodology that is currently being reviewed by the office of Nuclear Reactor Regulation (NRR). The new methodology was submitted to the NRC for review, to correct errors in the Unit 3 FSAR Chapter 15 offsite dose analysis, which the licensee discovered during their 50.54(f) design basis recovery effort. In a letter dated May 7, 1998, the licensee requested approval of a proposed license amendment (PLAR 3-98-3) to Chapter 15 of the final safety analysis report. This amendment request involves use of the aforementioned dose analysis methodology not yet approved by the NRC. At the close of the inspection report period, the office of NRR was in the process of reviewing that submittal.

The licensee's offsite dose analysis concluded the flow reduction was bounded by previous analyzed values. However, because of the ongoing NRR review, the inspector was not able to confirm the licensee's conclusions. Therefore, this issue will remain unresolved pending (1) completion of the NRR review of the licensee's accident analysis, (2) verification that offsite and control room doses are bounded by revised analysis and (3) evaluation of this event through the Significance Determination Process (SDP). **(URI 50-423/01-05-03).** As reported in LER 50-423/2001-001, the failure to properly verify these valves open in accordance with TS 3.6.2.1 (specifically surveillance requirement 4.6.2.1.a.1, which requires position verification every 31 days) is an

apparent violation of technical specifications. The NRC's evaluation of the offsite dose consequence methodology is ongoing and could impact the safety significance of the violation. Therefore, this apparent violation will be dispositioned during the closure of the related unresolved item. Based on the inspector's review of the licensee's evaluation and related corrective actions, **LER 50-423/2001-001** is **closed**.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to the Vice President -Nuclear Operations - Millstone and other members of licensee management at the conclusion of the inspection. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during this inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

a. List of Items Opened, Closed and Discussed

Opened

50-423/01-05-02	FIN	Improper work control review for a temporary modification resulted in turbine-driven auxiliary feedwater system inoperability (1R23)
50-423/01-05-03	URI	Quench Spray System Manual Valve Misalignment (4OA3.1)

Opened and Closed During this Inspection

50-423/01-05-01	NCV	Failure to implement timely corrective actions for piping leaks on service water strainer blowdown lines (1R13)

Closed

50-423/2001-001	LER	Quench Spray System Manual Valve Misalignment (40A3.1)

b. List of Acronyms Used

AWOs	automated work orders
CRs	condition reports
FB	fuel building
FPER	fire protection evaluation report
FSAR	final safety analysis report
FWA	auxiliary feedwater
LER	licensee event report
MOVs	motor operated valves
NDT	nondestructive testing
NRR	Nuclear Reactor Regulation
OD	operability determination
PI	performance indicator
PMT	post maintenance testing
QSS	quench spray system
RSS	recirculation spray system
RWST	refueling water storage tank
SDP	significance determination process
SLCRS	supplementary leak collection and release system
SP	surveillance procedure
SWP	service water
TBD	to be determined
TDAFW	turbine driven auxiliary feedwater
TM	temporary modification
TS	technical specification