August 12, 2008

Mr. David Christian
Sr. Vice President and Chief Nuclear Officer
Dominion Resources
5000 Dominion Boulevard
Glenn Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION – NRC INTEGRATED INSPECTION REPORT 05000336/2008003 AND 05000423/2008003

Dear Mr. Christian:

On June 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Millstone Power Station, Unit 2 and Unit 3. The enclosed inspection report documents the inspection results, which were discussed on July 8, 2008, with Mr. Robert Griffin, Director Nuclear Safety and Licensing, and other members of your staff.

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

This report documents two NRC-identified findings of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. In addition, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Millstone.

In accordance with Title 10 of the Code of Federal Regulations Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS).

ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/ Original Signed by:

Barry S. Norris, Acting Chief
Projects Branch 5
Division of Reactor Projects

Docket Nos. 50-336, 50-423
License Nos. DPR-65, NPF-49
Enclosure: Inspection Report No. 05000336/2008003 and 05000423/2008003
w/ Attachment A: Supplemental Information
Attachment B: TI 172 Documentation Questions for Millstone Unit 2

cc w/encl:
J. Price, Site Vice President, Millstone Station
C. Funderburk, Director, Nuclear Licensing and Operations Support
W. Bartron, Supervisor, Station Licensing
J. Spence, Manager Nuclear Training
L. Cuoco, Senior Counsel
C. Brinkman, Manager, Washington Nuclear Operations
J. Roy, Director of Operations, Massachusetts Municipal Wholesale Electric Company
First Selectmen, Town of Waterford
B. Sheehan, Co-Chair, NEAC
E. Woollacott, Co-Chair, NEAC
E. Wilds, Jr., Ph.D, Director, State of Connecticut SLO Designee
J. Buckingham, Department of Public Utility Control
C. Meek-Gallagher, Commissioner, Suffolk County, Department of Environment and Energy
V. Minei, P.E., Director, Suffolk County Health Department, Division of Environmental Quality
R. Shadis, New England Coalition Staff
S. Comley, We The People
D. Katz, Citizens Awareness Network (CAN)
R. Bassilakis, CAN
J. M. Block, Attorney, CAN
P. Eddy, Electric Division, Department of Public Service, State of New York
P. Tonko, President and CEO, New York State Energy Research and Development Authority
J. Spath, SLO Designee, New York State Energy Research and Development Authority
N. Burton, Esq.

ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/ Original Signed by:

Barry S. Norris, Acting Chief
Projects Branch 5
Division of Reactor Projects

Docket Nos. 50-336, 50-423
License Nos. DPR-65, NPF-49
Enclosure: Inspection Report No. 05000336/2008003 and 05000423/2008003
w/ Attachment A: Supplemental Information
Attachment B: TI 172 Documentation Questions for Millstone Unit 2

Distribution w/encl:
S. Collins, RA
M. Dapas, DRA
S. Williams, RI OEDO
H. Chernoff, NRR
J. Lubinski, NRR
C. Sanders, NRR, PM
E. Miller, NRR
S. Shaffer, SRI
J. Benjamin, RI
J. Krafty, RI
C. Kowalyshyn, OA
D. Jackson, DRP
B. Norris, DRP
N. Sieller, DRP
Region I Docket Room (with concurrences)
ROPreports@nrc.gov

SUNSI Review Complete: BN (Reviewer's Initials)
DOCUMENT NAME: G:\DRP\BRANCH5\Reports\Drafts\MS IR 2008003 rev 4.doc
After declaring this document "An Official Agency Record" it **will** be released to the Public.
To receive a copy of this document, indicate in the box:"C" = Copy without attachment/enclosure **"E"** = Copy with attachment/enclosure **"N"** = No copy **Adams Accession No.**

OFFICE	RI/DRP		RI/DRP	
NAME	S Shaffer / BN for		B Norris / BN	
DATE	08/12/08		08/12/08	

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-336, 50-423
License No.:	DPR-65, NPF-49
Report No.:	05000336/2008003 and 05000423/2008003
Licensee:	Dominion Nuclear Connecticut, Inc.
Facility:	Millstone Power Station, Units 2 and 3
Location:	P. O. Box 128 Waterford, CT 06385
Dates:	April 1, 2008 through June 30, 2008
Inspectors:	S. Shaffer, Sr. Resident Inspector, Division of Reactor Projects (DRP) J. Benjamin, Resident Inspector, DRP J. Krafty, Resident Inspector, DRP J. Lilliendahl, Reactor Inspector, Division of Reactor Safety (DRS) D. Orr, Senior Reactor Inspector, DRS H. Gray, Senior Reactor Inspector, DRS E. Burket, Reactor Inspector, DRS T. Moslak, Health Physicist, DRS J. Commiskey, Security Inspector, DRS B. Norris, Senior Project Engineer, DRP
Approved by:	Barry S. Norris, Acting Chief Projects Branch 5 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY OF FINDINGS 1

1. REACTOR SAFETY 1

1R01 Adverse Weather Protection (71111.01) 1
1R04 Equipment Alignment (71111.04) 2
1R05 Fire Protection (71111.05Q) 3
1R08 In-service Inspection (ISI) (71111.08) 10
1R11 Licensed Operator Requalification Program (71111.11) 11
1R12 Maintenance Effectiveness (71111.12Q) 11
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13) 12
1R15 Operability Evaluations (71111.15) 12
1R18 Plant Modifications (71111.18) 13
1R19 Post-Maintenance Testing (71111.19) 14
1R20 Refueling and Other Outage Activities (71111.20) 14
1R22 Surveillance Testing (71111.22) 15

2. RADIATION SAFETY 16

2OS1 Access Control to Radiologically Significance Areas (71121.01) 16
2OS2 ALARA Planning and Controls (71121.02) 18

4. OTHER ACTIVITIES [OA] 21

4OA1 Performance Indicator (PI) Verification (71151) 21
4OA2 Identification and Resolution of Problems (71152) 21
4OA3 Followup of Events and Notices of Enforcement Discretion (71153) 23
4OA5 Other Activities 28
4OA6 Meetings, including Exit 30
4OA7 Licensee-Identified Violations 30

ATTACHMENT A A-1
ATTACHMENT B B-1

SUMMARY OF FINDINGS

IR 05000336/2008-003, 05000423/2008-003 April 1, 2008 – June 30, 2008; Millstone Power Station Unit 2 and Unit 3; Fire Protection and Event Follow-up

The report covered a three-month period of inspection by resident and region-based inspectors. Two Green findings, both of which were non-cited violations (NCV's), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 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 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a Green NCV of 10CFR50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for Dominion's failure to provide adequate maintenance instructions for replacing the gaskets on the "B" low pressure safety injection (LPSI) pump suction line. Specifically, the work order did not contain torque requirements; as a result, the flanged joint was over-torqued and caused the flexitallic gasket to fail. Debris from the gasket prevented the "B" LPSI pump suction isolation valve from closing, and caused a reactor coolant system leak in excess of Technical Specification limits. Dominion declared an Unusual Event. Dominion replaced the gasket and repaired the valve. The performance deficiency was Dominion's failure to provide adequate maintenance instructions for assembling the flanged connection, including appropriate torque values.

  This finding is more than minor because it is associated with the Human Performance attribute of the Initiating Event Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations. The inspectors conducted a Phase 1 screening in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process;" a quantitative assessment (Phase 2) was required because the finding increased the likelihood of a loss of RCS inventory. The Phase 2 analysis resulted in the finding being screened as having very low safety significance (Green) because the change in core damage frequency was in the range of low 1E-7. The finding has a cross cutting aspect in the area of Human Performance, Resources, because Dominion did not ensure complete, accurate, and up-to-date work packages for the replacement of the gaskets in the "B" LPSI pump suction line. [H.2(c)] (Section 4OA3.1)

Cornerstone: Mitigating Systems

- Green. The NRC identified a Green NCV of the Millstone Unit 3 operating license, Condition 2.H, "Fire Protection," in that Dominion failed to appropriately evaluate and correct in a timely manner a fire protection program deficiency. Specifically, Dominion failed to assure that one train of charging would remain free of fire damage for fire

scenarios that could produce spurious closure of a volume control tank (VCT) outlet or charging pump suction motor operated valves. This issue was first identified by Dominion in September 2004, but plans to thoroughly evaluate the issue relative to the fire protection program were extended on several occasions. Dominion initiated compensatory measures to minimize the likelihood of a fire in the affected area, to maximize the availability of the "C" charging pump, and to determine a long term resolution.

This finding is more than minor because it is associated with the External Factors attribute (fire) of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the availability of the charging system was not ensured for nine fire scenarios. Using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," the inspectors conducted a Phase 1 screening, and a combination of Phase 2 and 3, to determine that this finding was of very low safety significance (Green), with an estimated total core damage frequency (CDF) of 1 in 1,400,000 years in the range of 7E-7 per reactor operating year. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Dominion extended the due dates to perform a thorough evaluation of the issue. [P.1(c)] (Section 1R05.2)

B. Licensee-Identified Violations

One violation of very low safety significance (Green) identified by the licensee was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Units 2 & 3 operated at or near 100 percent power throughout the inspection period with the following exceptions. On April 6, 2008, Dominion shutdown Unit 2 to begin refueling outage 2R18; Dominion returned Unit 2 to 100 percent on May 17. On May 22, Unit 2 scrammed from 100 percent power during a thunderstorm; on May 24, Unit 2 scrammed during the reactor startup due to a loss of power to the reserve station service transformer. Dominion returned Unit 2 to 100 percent power on May 29. On June 28, operators manually scrammed Unit 2 from 100 percent power due to a loss of both main feed pumps, and remained in Mode 3 for the remainder of the report period. On April 5, 2008, Dominion reduced power on Unit 3 to 90 percent for turbine valve testing and swapping of main feedwater pumps; Dominion returned Unit 3 to 100 percent power on April 6, 2008.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Seasonal Site Inspection

a. Inspection Scope (1 Sample)

The inspectors reviewed selected equipment and supporting structures to determine if they were configured in accordance with Dominion's procedures, and if adequate controls were in place to ensure functionality of the systems. The inspectors reviewed the requirements in the Unit 2 Updated Final Safety Analysis Report (UFSAR), Technical Specifications (TS), and Individual Plant Examination for External Events, to ascertain if the procedures were consistent. The inspectors performed partial walkdowns of the Unit 2 intake structures, fire pump house, and selected flood gate and tornado doors, to determine the adequacy of equipment protection from the effects of hurricanes and tornadoes. The inspectors also interviewed operations and maintenance personnel to determine if special equipment for flood protection (i.e., drain plugs for the fire pump house and fiberglass covers for the Unit 2 service water (SW) pump motors) were readily available. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

.2 External Flooding Inspection

a. Inspection Scope (1 Sample)

The inspectors evaluated Dominion's preparation for and protection from the effects of external flooding conditions for Unit 2. The inspectors reviewed the Unit 2 UFSAR and applicable procedures to determine the readiness of applicable safety-related structures, systems, and components (SSCs). The inspectors performed walkdowns of the Unit 2 emergency diesel generator (EDG) rooms to determine the adequacy of the floodgates

and flood doors to perform their design function. Additionally, the inspectors reviewed recent licensee inspection results, including floodgate inspections, to determine if previously identified deficiencies had been entered into Dominion's corrective action program (CAP) for resolution. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

.3 Readiness of Offsite and Alternating Current (AC) Power Systems (1 Sample)

a. Inspection Scope (1 Sample)

The inspectors reviewed Dominion's procedures for notifications of abnormal grid conditions by Independent System Operator (ISO) New England's and Connecticut Valley Exchange (CONVEX) to determine if they were adequate to ensure the reliability of AC power systems. The inspectors reviewed the procedures to determine if they addressed inadequate post-trip voltages of the offsite power supply, unknown post-trip voltages, reassessment of risk when maintenance activities could affect grid reliability, and required communication between Dominion and ISO New England/CONVEX when changes at the site could impact the transmission system. In addition, the inspectors reviewed operations logs to determine if plant response during a notification was consistent with the established procedures. The inspectors walked down Units 2 and 3 control room communications equipment to determine if there was dedicated equipment for communication with ISO New England and CONVEX. The inspectors interviewed selected operations personnel from Units 2 and 3 to determine if they were familiar with the procedures for abnormal grid conditions. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope (5 Samples)

The inspectors performed five partial system walkdowns during this inspection period. The inspectors reviewed the documents listed in Attachment A to determine the correct system alignment. The inspectors conducted a walkdown of each system to determine if the critical portions of the systems were aligned in accordance with the procedures, and to identify any discrepancies that may have had an affect on operability. The walkdowns included selected switch and valve position checks, and verification of electrical power to critical components. Finally, the inspectors evaluated elements such as material condition, housekeeping, and component labeling. The following systems were reviewed based on their risk significance for the given plant configuration

Unit 2

- Auxiliary building pre-outage scaffolding walkdown;
- "A" and "B" engineered safety features (ESF) rooms with shutdown cooling in place; and
- Reactor vessel level monitoring prior to reactor drain down.

Unit 3

- "B" charging pump when the "C" charging pump breaker was moved to the "A" charging pump breaker enclosure on April 11, 2008; and
- "B" residual heat removal (RHR) when performing "A" RHR vent and vent valve lineup on April 17, 2008.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdowns (71111.04S)

a. Inspection Scope (1 Sample)

The inspectors completed a detailed review of the alignment and condition of the Unit 2 reactor building closed cooling water (RBCCW) system. The inspectors conducted a walkdown of the system to determine whether critical portions, such as valve positions, switches, and breakers, were aligned in accordance with procedures, and to identify any discrepancies that may have had an effect on operability. The inspectors interviewed the system engineer, reviewed system health reports, and related condition reports (CRs) to determine if noted deficiencies significantly affected the RBCCW system functions, and were being or had been appropriately resolved. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

.1 Quarterly Inspection

a. Inspection Scope (5 Samples)

The inspectors performed walkdowns of five fire protection areas. The inspectors reviewed Dominion's fire protection program to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for the selected areas. The inspectors walked down these areas to assess Dominion'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 inspectors compared the existing conditions of the areas to the fire protection program requirements to determine if all program requirements were being met. Documents reviewed during the inspection are listed in Attachment A. The fire protection areas reviewed included:

Unit 2

- Containment elevation -22'6";
- Containment elevation -3'6";
- Containment elevation 14'6";
- Containment elevation 36'6"; and
- Fire Area A-14, Top of Spent Fuel Pool & Fuel Handling Area 38'6".

b. Findings

No findings of significance were identified.

.2 (Closed) URI 05000423/2007007-01, Control Room Fire Evacuation Procedure

a. Inspection Scope

During the triennial fire protection team inspection conducted September 17 to October 5, 2007, the NRC identified a concern with respect to post-fire safe shutdown operations and potential vulnerabilities to the reactor coolant system (RCS) makeup and reactor coolant pump (RCP) seal injection functions of the charging system during a control room fire that required evacuation. Specifically, the team identified that during a main control room (MCR) fire scenario, a spurious closure of a volume control tank (VCT) outlet valve would consequentially fail the only credited safe shutdown charging pump, if it was running at the onset of the valve closure. The NRC treated this issue as an unresolved item (URI) pending further inspector review of credible fire scenarios, and the potential impact on the VCT outlet valve control cabling. This URI was documented in NRC Inspection Report 05000423/2007007, Section 1R05.01.

The inspectors reviewed Dominion's report to the NRC Operations Center for an unanalyzed condition (in accordance with 10CFR50.72(b)(3)(ii)(B)), submitted on October 12, 2007, as a result of the inspection team inquiry. Dominion identified additional fire areas with the same charging system vulnerability, and two "A" charging pump suction motor operated valves (MOV's) that were subject to spurious closure (MV8468A and MV8468B). The inspectors reviewed the associated Licensee Event Report (LER) and independently assessed Dominion's evaluation of the issue. On December 19-20, 2007, and on April 2, 2008, the inspectors performed walk downs of the affected fire areas, interviewed operators and engineers, and gathered relative information for the Significance Determination Process (SDP). Documents reviewed during the inspection are listed in Attachment A.

b. Findings

Introduction. The inspectors identified a Green, Non-Cited Violation (NCV) of the Millstone Unit 3 operating license, Condition 2.H, "Fire Protection," in that Dominion failed to appropriately evaluate and correct in a timely manner a fire protection program deficiency. Specifically, Dominion failed to assure that one train of charging would remain free of fire damage for fire scenarios that could produce spurious closure of a VCT outlet or charging pump suction motor operated valves. This issue was first identified by Dominion on September 16, 2004, but plans to thoroughly evaluate the issue relative to the fire protection program were extended on several occasions.

Description. During the triennial fire protection team inspection conducted September 17 to October 5, 2007, the NRC reviewed 25212-BTP-9.5-1, "MP3 Branch Technical Position 9.5-1 Compliance Report," Revision 003, and noted that the charging pump VCT outlet level control valves were subject to spurious operation during a MCR fire. The team questioned engineers regarding the validity of this conclusion and if Dominion had considered the impact of the VCT outlet valve isolating the suction path to an operating charging pump, during the time necessary to evacuate the MCR and to establish control at the auxiliary shutdown panel (ASP). The engineers confirmed that a VCT outlet level control valve spurious closure was possible for a MCR fire, and that an operating charging pump would fail in a relatively short time without a suction path. Dominion provided to the team CR-04-08399 and CR-04-08450 that were initiated on September 16, 2004, for the same potential issue the inspectors raised: catastrophic failure of an operating charging pump due to loss of a suction path from a spurious closure of a VCT outlet level control valve.

Only two charging pumps ("A" and "B") were analyzed for safe shutdown, and only the "A" charging pump could be operated remotely for a fire requiring MCR evacuation. The third charging pump ("C") was available but was normally secured, with the 4 kilovolt (kV) breaker uninstalled. Dominion's Unit 3 safe shutdown analysis for a MCR fire only credited the "A" charging pump for RCS makeup and RCP seal injection functions. The team further identified that Kirk-interlock keys were not available outside of the MCR to rack in the normally disconnected breaker for the "C" charging pump.

On October 12, 2007, Dominion performed an engineering review and determined that additional fire scenarios, under certain circumstances, could result in the loss of the running charging pump and the unavailability of the remaining charging pumps due to potential fire damage. In addition to the corrective actions taken for the URI, Dominion implemented compensatory measures to minimize risk of fire in the additional areas of concern.

On December 3, 2007, Dominion submitted LER 05000423/2007004-00, "Fire Scenario Results in Unanalyzed Condition – Potential Loss of Charging." The LER reported that a total of nine fire areas were affected. The fire areas were the east and west switchgear areas, the control building cable spreading area, the MCR, the instrument rack room, the east motor control center(MCC)/rod control area, the west MCC/rod control/air conditioning unit area, and the north and south service building tunnels. The LER described Dominion's compensatory measures to minimize the likelihood of fire in the affected areas and administrative controls to maximize the availability of the "C" charging pump in the event of a fire.

The inspectors concluded that the performance deficiency was Dominion's failure to correct a long standing fire protection deficiency, since September 16, 2004, and to assure that one train of charging would remain free of fire damage for fire scenarios that could produce spurious closure of a VCT outlet or charging pump suction motor operated valve. Dominion entered the issue into the CAP as CRs-07-10124, -10158, -10363, and -10614, and initiated corrective actions to implement fire protection program compensatory measures, maximize the availability of the "C" charging pump, and identify and implement a long term resolution.

Analysis. This finding is more than minor because it is associated with the External Factors attribute (fire) of the Mitigating Systems Cornerstone objective to ensure the

availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the availability of the charging system was not ensured for nine fire scenarios.

The inspectors used a Phase 1, and a combination of Phase 2 and 3, of the NRC's IMC 0609, Appendix F, "Fire Protection Significance Determination Process (SDP)," to determine that this finding was of very low safety significance (Green), with an estimated total Core Damage Frequency (CDF) of 1 in 1,400,000 years, in the range of 7E-7 per reactor operating year. In accordance with Phase 1, a Phase 2 SDP review was necessary because the issue involved post-fire shutdown and was assigned a high degradation rating. The high degradation rating was assigned because Dominion did not ensure that a charging pump would be available to makeup to the RCS given a potential fire in nine specific fire areas. The post-fire safe shutdown analysis did not credit the "C" charging pump, nor was it administratively controlled to maximize availability for post-fire safe shutdown operations. Further, the kirk keys needed to align and operate the "C" charging pump were maintained in the MCR, and operators were not procedurally directed to obtain the keys prior to MCR evacuation.

The Phase 2 analysis was sufficient for all affected areas except for the MCR. A Phase 3 analysis was needed for the MCR fires, to address the potential for: spurious valve actuations; MCR evacuation and time dependent operator actions involved with transfer of control to the ASP; and the use of the "C" charging pump as an injection source following human recovery actions. MCR evacuation conditions included habitability concerns, due to smoke or heat, and a loss-of-control scenario due to fire damage to both trains of the charging system. The Phase 3 analysis was based, in part, on NUREG 6850, "Fire Probabilistic Risk Assessment (PRA) Methodology for Nuclear Power Facilities – Final Report."

The triennial fire protection inspection team leader performed the Phase 2 analysis, and a Region I Senior Reactor Analyst (SRA) performed a peer review. The SRA performed the Phase 3 analysis, and another Region I SRA and a NRC Headquarters risk analyst performed peer reviews.

Phase 2 CDF Estimate (3.9E-7/reactor operating year) - For areas other than the MCR

To gather the information necessary to complete the Phase 2 analysis, the inspectors walked down the affected areas during the triennial fire protection inspection, and again on December 19 and 20, 2007. The inspectors noted the available fire suppression and detection systems. The inspectors recorded distances from ignition sources to target combustibles, cable trays, and smoke detectors. The fire frequencies for specific areas were developed from the ignition sources, with a probability of non-suppression (Pns) of 1.0 applied. The Pns of 1.0 was based on fire detector response times, a manual fire fight suppression assumption of 10 minutes, and time to cable damage calculations using NUREG 1805, "Fire Dynamics Tools Quantitative Fire Hazard Analysis Methods for the U.S. Nuclear Regulatory Commission Fire Protection Inspection Program – Final Report."

The inspectors focused on all potential ignition sources, target combustibles, and electrical cable routing for components that could lead to a loss of RCP seal cooling (LOSC), which could progress to a RCP seal loss of coolant accident (Seal LOCA). A LOSC occurs if seal injection from the charging system and seal cooling from the

component cooling water (CCW) system are not provided. Where applicable, the fire driven frequency of a Seal LOCA was calculated based on: the calculated fire frequency; and the probabilities that fire induced control cable hot shorts cause spurious valve closures of the charging pump suction valves, and the CCW supply/return valves from the RCP thermal barrier heat exchangers.

The worst case scenarios were assumed with the fire-unaffected train charging pump running, but being damaged by the spurious closure of suction valves powered by the fire-affected train. It was also assumed that a fire in any area would cause the emergency core cooling system (ECCS) equipment in that area to be inoperable, but that the unaffected train of safety systems would be available to respond to the Seal LOCA. This was the worst case because a fire in the same train as the running charging pump would allow operators prevent a LOSC by starting the charging pump in the unaffected train, in accordance with normal loss of charging procedures.

The CDF was then developed using the Risk Informed Inspection Notebook for Millstone Power Station, Unit 3, with the assumption that results of the fire driven Seal LOCA frequency would be equivalent to a small break loss of coolant accident (SLOCA). Using the SLOCA Worksheet, the dominant conditional core damage probability (CCDP) sequence would be failure of high pressure recirculation, with a probability of E-2, because of a failure of either the remaining train of recirculation spray or safety injection.

The Phase 2 analyzed fire areas included:

- Instrument Rack Room, Control Building Cable Spreading Area, and North and South Service Building Tunnels – The control building cable spreading area and north and south service building tunnels were not significant contributors (screened out) because of no credible fire ignition sources. The instrument rack room was found not to contribute significantly because a fire that could affect the charging system valves should not also affect CCW; as such, this fire was found to be mitigated by a normal plant shutdown, without charging, which when combined with the fire frequency resulted in a CDF many orders of magnitude below the relevant magnitudes in the other fire areas.

- East Switchgear Room Fire – A Train – The fire frequency that could cause spurious valve closures that would result in a LOSC was estimated at 1.2E-5 per reactor operating year, resulting in an estimated CDF of 2.2E-8 per reactor operating year. The following fire area specific assumptions were used: the “B” charging pump was running at the time of the fire and it normally would run approximately 50% of the time; and a LOSC due to fire induced spurious closure of train “A” valves (one of two valves in the “B” charging pump suction path and one supply CCW valve).

- West Switchgear Room Fire – B Train – The fire frequency that could cause spurious valve closures that would result in a LOSC was estimated at 1.8E-5 per reactor operating year, resulting in an estimated CDF of 4.5E-8 per reactor operating year. The following fire area specific assumptions were used: the “A” charging pump was running at the time of the fire and it normally would run approximately 50% of the time; and a LOSC due to fire induced spurious closure of train “B” valves (one of two valves in the “A” charging pump suction path and one supply CCW valve).

- East MCC/Rod Control Room Fire – A Train – The fire frequency that could cause spurious valve closures that would result in a LOSC was estimated at 6.6E-5 per reactor operating year, resulting in an estimated CDF of 2.4E-7 per reactor operating year. The following fire area specific assumptions were used: the "B" charging pump was running at the time of the fire and it normally would run approximately 50% of the time; and a LOSC due to fire induced spurious closure of train "A" valves (one of two valves in the "B" charging pump suction path and one of three CCW supply/return valves.)

- West MCC/Rod Control Room Fire – B Train – The fire frequency that could cause spurious valve closures that would result in an LOSC was estimated at estimated at 2.0E-5 per reactor operating year, resulting in an estimated CDF of 8.0E-8 per reactor operating year. The following fire area specific assumptions were used: the "A" charging pump was running at the time of the fire and it normally would run approximately 50% of the time; and a LOSC due to fire induced spurious closure of train "B" valves (one of two valves in the "A" charging pump suction path and one of three CCW supply/return valves).

Phase 3 CDF Estimate (3.1 E-7 per reactor operating year) – For the MCR

The core damage sequences of interest were MCR fires (evacuation) and subsequent shutdown from the ASP, with "A" charging pump running, that causes the spurious closure of one of the four suction valves (two in "A" train and two in "B" train) which consequentially fails the "A" charging pump. A LOSC was assumed given that the "A" charging pump would have been damaged and the "A" train CCW pump would be secured as required by the remote shutdown procedure. The only injection source by procedure to prevent core damage in this situation was the "C" charging pump.

The "C" charging pump was initially assumed to be unavailable, because the shift manager would not have taken the required kirk key when operators evacuated the MCR. The "C" charging pump is not normally aligned and does not have a circuit breaker installed in its cubicle. A kirk key is needed to complete the alignment of the "C" charging pump, which would include moving the "A" charging pump circuit breaker into its cubicle.

To complete the Phase 3 analysis, the SRA walked down the procedure to align the "C" charging pump to the "A" 4kV safeguards bus, including the use of the kirk keys and the potential for defeating these interlocks. The Phase 3 analysis was conducted using an assumed large and small MCR fire, as suggested by SANDIA National Labs (NRC's fire analysis contractor) and several techniques documented in NRC NUREG 6850.

The NRC's high temperature LOSC model from the Unit 3 Standardized Plant Analysis Risk model was utilized, assuming that there was no operator action to depressurize the reactor (this action was not directed by the remote shutdown procedure). Using this LOSC model, the available time to core damage was determined for the different seal leakage rates and probabilities. The available times were used to determine the non-recovery probabilities for the "C" charging pump as the only makeup source for conditions where the operators would defeat the kirk key interlock or return to the MCR after the fire was extinguished to retrieve the kirk key.

The Phase 3 analysis for the MCR included:

- Large MCR Fire – The fire frequency that could cause spurious valve closures that would result in a loss of the running "A" charging pump and evacuation of the MCR due to heat and smoke was estimated at 6.9E-7 per reactor operating year. The estimated CCDP resulting from a LOSC was 2.1E-1. This resulted in an estimated CDF of 1.5E-7 per reactor operating year.

  The following fire area and sequence specific assumptions were used: 1) the "A" charging pump was running at the time of the fire and it normally would run approximately 50% of the time; 2) probability of CR evacuation equal to 1.0 if a fire was not suppressed within 15 minutes; 3) the probability of Pns for a MCR fire after 15 minutes was 1E-2; 4) the fire frequency in the only panel housing the charging system was determined by dividing the 2.5E-3 per reactor operating year MCR panel fire frequency by 8 (the number of Unit 3 MCR panels); 5) the probability that the "A" charging pump was damaged equaled the probability that one of the four cables in the main control panel caused a spurious hot short closing that valve was estimated as 0.44, using the methodology in NUREG 6850 and based on the actual composition of the cables; and 6) a 50% probability of MCR entry to retrieve the kirk key after one hour.

- Small Fire in MCR Charging Panel – The fire frequency that could cause spurious valve closures that would result in the loss of the running "A" charging pump and the inability to start the "B" charging pump due to fire damage and evacuation of the MCR due to the loss of both trains of charging was estimated at 2.6E-6 per reactor operating year. The estimated CCDP resulting from a LOSC was 6.2E-2. This resulted in an estimated CDF of 1.6E-7 per reactor operating year.

  The following fire area and sequence specific assumptions were used: 1) the "A" charging pump was running at the time of the fire and it normally would run approximately 50% of the time; 2) probability of CR evacuation equal to 1.0, if both trains of charging were impacted; 3) the probability that the "A" charging pump was damaged equaled the probability that one of the four cables in the MCR caused a spurious hot short closing that valve equaled 0.44; 4) the probability, including the non-suppression probability, that the "B" charging pump was damaged was 4.3E-3, based on the minimum distance of 0.13 meters between the "A" charging train valves and the "B" charging pump control switch on the charging section of the main control board and using the methodology in NUREG 6850, Appendix L; 5) the frequency of the small fire was determined as 2.5E-3 per reactor operating year; and 6) a 90% probability of MCR entry to retrieve the kirk key after one hour.

The inspectors determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Dominion did not thoroughly evaluate the problem regarding potential fire induced spurious closure of charging pumps suction valves, which could damage the running charging pump and potentially impact post-fire safe shutdown operation. This issue is reflective of current licensee performance because Dominion extended the due dates to perform a thorough evaluation of the issue. [P.1(c)]

Enforcement. Millstone Unit 3 Operating License, Condition 2.H, states, in part, that Dominion Nuclear Connecticut shall implement and maintain in effect all provisions of the approved fire protection program, as described in the UFSAR. The Fire Protection

Evaluation Report requires Dominion to comply with Branch Technical Position (BTP) Chemical, Mechanical, and Electrical Branch (CMEB) 9.5-1, Position C.4.h, Corrective Action. The BTP CMEB 9.5-1, position C.4.h, requires that measures be established to ensure that conditions adverse to fire protection, such as deficiencies, are promptly identified, reported, and corrected. Contrary to the above, from September 16, 2004, to October 5, 2007, Dominion did not correct a fire protection program deficiency to assure that one train of charging would remain free of fire damage for fire scenarios that could produce spurious closure of a VCT outlet or charging pump suction motor operated valve. Because this finding was of very low safety significance (Green) and has been entered into Dominion's CAP (CRs-07-10124, -10158, -10363, and -10614), this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy.

(NCV 05000423/2008003-01, Fire Protection Deficiency Resulting in Potential Loss of All Charging Pumps)

(URI 05000423/2007007-01, Control Room Fire Evacuation Procedure, is closed)

1R08 In-service Inspection (ISI) (71111.08)

a. Inspection Scope (1 Sample)

Activities inspected during the Unit 2 refuel outage 18 (2R18) included observations of ultrasonic testing (UT) and analysis of test results using both manual UT techniques and phased array UT. This included the 36" cold leg RCP discharge safe end-to-pipe weld (P-9-C-3), the steam generator (SG) shell welds (1-SC-2A and 1-SC-3), weld overlays on the 12" hot leg nozzle-to-safe end surge line weld (BPS-C-1001), and the 12" hot leg shutdown cooling nozzle-to-safe end weld (BSD-C-2001). The inspectors reviewed a sample of in-vessel visual inspection (IVVI) video records for the core barrel shim support plate, lower core support structure, control rod guide tubes, and two previously repaired thermal shield lug areas. The inspectors also reviewed test data for the reactor pressure vessel (RPV) shell to nozzle welds, UT and visual, and confirmed they were evaluated by the licensee as part of the ISI process. The inspectors also observed magnetic particle testing and UT of main steam weld MSA-CG-03A on SG1. Personnel qualification records for UT and welding operators were examined for proper certifications and reviewer levels.

Results of the radiographic testing (RT) dated 4/20/08 for ISI welds ECCS-CF-588, 590, 591 and HSI-CF 429 and weld 18" ERD (A)-8 on work order (WO) M2 07-03605 were reviewed. The inspectors evaluated the radiographs and RT documentation for comparison to the ISI RT and American Society of Mechanical Engineers (ASME) Code fabrication requirements. The inspectors performed a walk-down of portions of the containment liner to confirm the acceptance of a sample of the visual examinations made per ASME, Section XI. The containment liner program manager was interviewed to verify the scope of containment boundary examinations for 2R18. A review of the boric acid corrosion control program was conducted by interviewing the program manager to verify boric acid leaks were identified, properly documented in the CAP, and subsequently tracked and repaired. A boric acid walk-down included a visual inspection of accessible areas of the reactor vessel upper head, which supplemented the program review. In addition to reviewing the SG degradation analysis, eddy current testing (ECT) was observed for both SGs and analysis and disposition of results were reviewed. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope (2 Samples)

The inspectors observed simulator-based licensed operator requalification training for Unit 2 on June 3, 2008, and for Unit 3 on May 20, 2008. The inspectors evaluated crew performance in the areas of clarity and formality of communications; ability to take timely actions; prioritization, interpretation, and verification of alarms; procedure use; control board manipulations; oversight and direction from supervisors; and command and control. Crew performance in these areas was compared to Dominion management expectations and guidelines as presented in OP-MP-100-1000, "Millstone Operations Guidance and Reference Document." The inspectors compared simulator configurations with actual control board configurations. The inspectors also observed Dominion evaluators discuss identified weaknesses with the crew and/or individual crew members, as appropriate. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope (4 Samples)

The inspectors reviewed four samples of Dominion's evaluation of degraded conditions, involving safety-related SSCs for maintenance effectiveness. The inspectors reviewed licensee implementation of the Maintenance Rule (10CFR50.65). The inspectors reviewed Dominion's ability to identify and address common cause failures, the applicable maintenance rule scoping document for each system, the current classification of these systems in accordance with 10CFR50.65 (a)(1) or (a)(2), and the adequacy of the performance criteria and goals established for each system, as appropriate. The inspectors also reviewed the current system health reports, CRs, apparent cause determinations, function failure determinations, operating logs, and discussed system performance with the responsible system engineer. Documents reviewed are listed in Attachment A. The specific systems/components reviewed were:

Unit 3

- Chemical & Volume Control System (System 3304);
- Station Black-out Diesel Generator (System 3346C);
- Solid State Protection System (System 3406); and
- ESF Injection – High Pressure Safety Injection (HPSI) (System 3308).

b. Findings

No findings of significance were identified.

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

a. Inspection Scope (10 Samples)

The inspectors evaluated online risk management for emergent and planned activities. The inspectors reviewed maintenance risk evaluations, work schedules, and control room logs to determine if concurrent planned and emergent maintenance or surveillance activities adversely affected the plant risk already incurred with out-of-service components. The inspectors evaluated whether Dominion took the necessary steps to control work activities, minimize the probability of initiating events, and maintain the functional capability of mitigating systems. The inspectors assessed Dominion's risk management actions during plant walkdowns. Documents reviewed during the inspection are listed in Attachment A. The inspectors reviewed the conduct and adequacy of risk assessments for the following maintenance and testing activities:

Unit 2

- April 4, 2008, 2R18 cumulative risk assessment;
- April 4, 2008, 2-SW-97B repair and planned orange shutdown risk configuration;
- April 9 and April 10, 2008 mid-loop and reduced inventory operations;
- April 10, 2008, reactor head lift;
- April 23, 2008, unplanned orange shutdown risk due to a loss of the "A" SW pump;
- April 24, 2008, planned orange risk due to single train of spent fuel pool cooling;
- May 1, 2008, 2R18 shutdown cooling system total outage in Mode 0 and planned orange shutdown risk configuration; and
- May 15, 2008, operational decision making plan for degraded pressurizer back-up heaters (CR 08-05739).

Unit 3

- May 15, 2008, planned work activities associated with "C" Circulating water pump and "C" SW pump outage and RHR valve lineup, followed by "A" circulating water pump and "A" screen wash pump outage; and
- May 20, 2008, planned work activities associated with "A" EDG, "A" EDG slave relays, and "A" circulating water and "A" screen wash pump

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (6 Samples)

The inspectors reviewed six operability determinations (OD's). The inspectors evaluated the OD's against the guidance contained in NRC Regulatory Issue Summary 2005-20, "Revision to Guidance Formerly Contained in NRC Generic Letter 91-18, Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability." The inspectors also discussed the

conditions with operators and system and design engineers, as necessary. Documents reviewed during the inspection are listed in Attachment A. The inspectors reviewed the adequacy of the following evaluations of degraded or non-conforming conditions:

Unit 2

- CR-08-04614, The Instrument Air Compressors have a Safety Function that is not Classified;
- CR-08-06866, NRC has Raised a Concern Regarding U2 Degraded Voltage AOP 2580;
- M2-EV-08-0019, Technical Evaluation for MP2 Electrical Distribution System Licensing Bases for Single Failure Analysis;
- OD MP2-012-08, The Impact of Foreign Material Discovered in the Primary System During 2R18;
- OD MP2-016-07, Revision 1, Failure of Pressurizer Backup Heaters; and,
- OD MP2-016-08, Application of Code Case N-316-3 on "D" RCP oil cooler piping without performing a magnetic particle test

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope (3 Samples)

To assess the adequacy of modifications, the inspectors performed walkdowns of selected plant systems and components, interviewed plant staff, and reviewed applicable documents, including procedures, calculations, modification packages, engineering evaluations, drawings, corrective action program documents, the UFSAR, and TS. For the modifications reviewed, the inspectors determined whether selected attributes (component safety classification, energy requirements supplied by supporting systems, seismic qualification, instrument setpoints, uncertainty calculations, electrical coordination, electrical loads analysis, and equipment environmental qualification) were consistent with the design and licensing bases. Design assumptions were reviewed to determine if they were technically appropriate and consistent with the UFSAR. For each modification, the 10CFR50.59 screenings or safety evaluations were reviewed, as described in Section 1R02 of this report. The inspectors also verified that procedures, calculations, and the UFSAR were properly updated with revised design information. In addition, the inspectors reviewed the as-built configuration to determine if it accurately reflected in the design documentation, and that post-modification testing was adequate to ensure the SSCs would function properly. A listing of documents reviewed is provided in Attachment A.

Unit 2

- CR 08-06328, Alternate Plant Configuration Generated for VR11 and VR21;
- DM2-00-0040-08, Modification of Pressurizer Lower Skirt Ventilation & MRI Insulation; and
- DM2-00-0270-07, MP2 Main GSU Replacement Project

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope (10 Samples)

The inspectors reviewed post-maintenance test (PMT) activities to determine whether the PMT adequately demonstrated that the safety-related function of the equipment was satisfied, given the scope of the work specified, and that operability of the system was restored. In addition, the inspectors evaluated the applicable test acceptance criteria to evaluate consistency with the associated design and licensing bases, as well as TS requirements. The inspectors also evaluated whether conditions adverse to quality were entered into the CAP for resolution. Documents reviewed during the inspection are listed in Attachment A. The following maintenance activities and PMT's were evaluated:

Unit 2

- "A" reactor coolant pump seal package and motor replacement;
- "B" control element drive motor cooling fan overhaul;
- "B" motor generator set flywheel balancing;
- "C" containment air recirculation cooling unit fan assembly replacement;
- Pressurizer heater replacement
- Radiographic and ultrasonic inspection results for the welds following replacement of 2-SI-V-247;
- SP2401Q, Response Time Testing of RCS Resistance Thermal Device's (RTD), Revision 10; SP2402TG, RCS RTD Calibration, Revision 3, Change 3; and SP2402TD, RPS Channel "D" Temperature Input Loops Calibration, Revision 0, Change 11, following replacement of the "D" RCP cold leg RTD;
- SPROC ENG07-2-004, Revision 000-03, MP2 Single Phase Main Transformer Isophase Bus and Disconnect Switch Start-up Testing; and,
- SPROC ENG08-2-003, Post Modification Pressure Test for 2-SI-247, Loop '2B' Non-Return Check Valve, Revision 0

Unit 3

- SP 3646A.1, Emergency Diesel Generator "A" Operability Test, Revision 17, Change 3, following replacement of the right bank air start valve on May 20, 2008

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

.1 Millstone Unit 2 Refueling Outage

a. Inspection Scope (1 Sample)

Dominion began the 2R18 on April 6 and completed the outage on May 17, 2008. The inspectors evaluated the outage plan and outage activities to determine if Dominion had considered risk, developed risk reduction and plant configuration control methods,

considered mitigation strategies in the event of loss of safety functions, and adhered to licensee and TS requirements. The inspectors observed portions of the shutdown, cool down, heat up, and startup processes. Additionally, the inspectors conducted an initial containment Mode 3 walk down and a final Mode 3 walk down to evaluate the as-found condition of the containment to ensure that no loose material or debris, which could be transported to the containment sump, were present. The inspectors reviewed the CAP to determine if conditions adverse to quality were entered for resolution. Documents reviewed during the inspection are listed in Attachment A. Some of the specified activities the residents observed and performed included:

- Reactor and shutdown and cool down;
- Reactor water level drain down to the reactor flange;
- Midloop and reduced inventory operations;
- Reactor head lift;
- Fuel handling, core loading, and fuel element assembly tracking;
- Flexitallic gasket retrieval in the RCS and fuel assemblies;
- RCS vacuum fill;
- Containment as-left walk down;
- Reactor heat up;
- Reactor startup;
- Low power physics testing;
- Reactor power ascension; and
- Unit 2 generator synchronization to the grid.

b. Findings

No findings of significance were identified.

.2 Millstone Unit 2 Forced Outage due to May 22 and May 24 Reactor Scrams

a. Inspection Scope (1 Sample)

Dominion entered a forced outage following a Unit 2 reactor scram associated with a load rejection at 100 percent power on May 22, 2008. On May 24, 2008, during a reactor and plant startup, Millstone Unit 2 had a second reactor scram following a lost of power to the Unit's reserve station service transformer. The inspectors evaluated the outage plan and outage activities to confirm that Dominion had appropriately considered risk, had developed risk reduction and plant configuration control methods, had adhered to licensee and TS requirements, and had identified the cause of the scrams and had taken an appropriate corrective action prior to the start-ups. The inspectors observed portions of the reactor and plant shutdowns, start-up processes and power ascension activities. The inspectors verified that conditions adverse to quality during the outage were entered into the corrective action program for resolution. Documents reviewed during the inspection are listed in Attachment A.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (11 Samples)

The inspectors reviewed surveillance activities to determine whether the testing adequately demonstrated equipment operational readiness and the ability to perform the intended safety-related function. The inspectors attended pre-job briefings, reviewed selected prerequisites and precautions to determine if they were met, and observed the tests to determine whether they were performed in accordance with the procedural steps. Additionally, the inspectors reviewed the applicable test acceptance criteria to evaluate consistency with associated design bases, licensing bases, and TS requirements and that the applicable acceptance criteria were satisfied. The inspectors also evaluated if conditions adverse to quality were entered into the corrective action program for resolution. Documents reviewed during the inspection are listed in Attachment A. The following surveillance activities were evaluated:

Unit 2

- April 7, 2008, SP 2613G, Integrated Test of Facility 1 Components (ICCE), Revision 011-03;
- April 27,2008, SP 2613H, Integrated Test of Facility 2 Components (ICCE), Revision 011-02;
- May 13, 2008, SP 2610BS, TDAFP High Flow Test in Mode 3, Revision 000-04;
- May 15, 2008, Low Power Physics Testing Cycle 19, Revision 002-03;
- May 15, 2008, SP 2605E, Containment Personnel Air Lock Leakage Test, Revision 011-00; and
- May 21, 2008, EN 21004E, ITC Measurements, Revision 6, Change 5;

Unit 3

- April 4, 2008, SP 3608.4, High Pressure Safety Injection System Vent and Valve Lineup Verification – Train "B," Revision 005-02;
- April 8, 2008, SP3646A.2, Emergency Diesel Generator "B" Operability Test, Revision 017-03;
- April 10, 2008, SP 31447VB, Trip Actuating Device Operational Test for 4KV Bus 34D Undervoltage, Revision 000-02;
- April 25, 2008, SP 3646A.8, Slave Relay Testing - Train "A," Revision 022-02; and
- SP3446B11, Train A Solid State Protection System Operational Test, Revision 014.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significance Areas (71121.01)

a. Inspection Scope (10 samples)

During the period May 5-9, 2008, the inspectors conducted the following activities to verify that the licensee was properly implementing physical, administrative, and

engineering controls for access to locked high radiation areas and other radiological controlled areas, and that workers were adhering to these controls when working these areas during 2R18 and during power operations at Unit 3. Implementation of these controls was reviewed against the criteria contained in 10CFR20, Unit 2 and Unit 3 TS, and the licensee's procedures. Documents reviewed during the inspection are listed in Attachment A. This inspection activity represents completion of ten samples relative to this inspection area.

Plant Walkdown and RWP Reviews

(1) During 2R18, the inspectors identified exposure significant work areas in the Unit 2 containment and primary auxiliary buildings. The inspectors reviewed radiation survey maps and radiation work permits (RWP) associated with these areas to determine if the radiological controls were acceptable. Work areas included the reactor cavity, pressurizer cubicle, SG cubicles, and containment sump area in the containment building, and spent resin transfer paths in the primary auxiliary building.

(2) The inspectors performed independent surveys of selected areas in the Unit 2 containment building and primary auxiliary building to confirm the accuracy of survey maps, the adequacy of postings, and that TS locked high radiation areas (LHRA) were properly secured and posted. Areas surveyed in containment included the SG cubicles, pressurizer relief lines, quench tank, reactor lower head access port, cavity drain line area, and RCP areas. Additional Unit 2 surveys included the auxiliary building, radwaste storage building, and fuel storage building.

(3) In evaluating RWP's, the inspectors reviewed electronic dose/dose rate alarm setpoints, and alarm reports, to determine if the setpoints were consistent with survey indications and plant policy. The inspectors verified that workers were knowledgeable of the actions to be taken when a dosimeter alarms or malfunctions for tasks being conducted under selected RWP's. Work activities reviewed included purification system filter changeouts (RWP 208-0220/1), containment entry (RWP 208-0390/4), heath physics support (RWP 208-0201/1), spent resin transfer (208-0017/2), and a Unit 3 containment entry during power operations (RWP 308-0090/1).

(4) The inspectors reviewed Personnel Contamination Reports (PCR) initiated for various outage related activities, and the associated dose assessments. The inspectors determined that no contamination resulted in an internal dose exceeding 10 mrem that would require documentation in a personnel exposure record.

Jobs-In-Progress Review

(5) The inspectors observed the preparations and various work stages for several tasks including a Unit 2 spent resin transfer, Unit 2 reactor cavity decontamination, and a Unit 3 containment entry during power operations. The inspectors attended the pre-job briefings for these tasks to evaluate if radiological controls were adequately communicated to the workers.

(6) The inspectors determined that additional dosimetry and area monitoring was implemented for dose significant jobs including issuing extremity dosimetry to personnel performing cavity decontamination, due to dose rate gradients, and

installing teledosimetry instrumentation to monitor dose fields during the core barrel lift.

High Risk Significant, High Dose Rate, and Very High Radiation Area Controls

(7) The inspectors reviewed the preparations made for various potentially high dose rate jobs including the initial removal of the core barrel from the reactor vessel, ISI, spent resin transfer, and SG eddy current testing.

(8) The inspectors inventoried keys to TS LHRA's stored at the Unit 2 Control Point to verify accountability for all keys. During tours of Unit 2, the inspectors verified that LHRA were secured and properly posted as required by regulatory criteria.

Radiation Worker and Radiation Protection Technician Performance

(9) Several radiologically related CRs were reviewed to evaluate if the incidents resulted from repetitive worker errors and to determine if an observable pattern traceable to a similar cause was evident.

(10) Radiation protection technicians and radiation workers were questioned regarding their knowledge of plant radiological conditions and associated controls to assess the effectiveness of pre-job briefings and preparations for doing work in a radiological controlled area.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope (7 samples)

During the period May 5-9, 2008, the inspectors conducted the following activities to verify that the licensee was properly implementing operational, engineering, and administrative controls to maintain personnel exposure ALARA (As Low As Reasonably Achievable) for tasks conducted during 2R18. Implementation of these controls was reviewed against the criteria contained in 10CFR20, applicable industry standards, and the licensee's procedures. Documents reviewed during the inspection are listed in Attachment A. This inspection activity represents completion of seven samples relative to this inspection area.

Radiological Work Planning

(1) The inspectors reviewed pertinent information regarding Unit 2 outage exposure history, current exposure trends, and ongoing activities to assess current performance and outage exposure challenges. The inspectors determined the site's 3-year rolling collective average exposure and compared it to current trends.

The inspectors reviewed the refueling outage work scheduled during the inspection period and the associated work activity exposure estimates. Work scheduled included alloy 600 inspections, pressurizer heater replacement, SG ECT, reactor

cavity decontamination, valve repairs, and containment de-mobilization. The inspectors compared the current actual dose accrued for completed activities with the initial exposure estimates.

Additionally, the inspectors reviewed the ALARA Reviews (AR), Work-In-Progress (WIP) AR's, ALARA Challenge Board presentations, and High Radiological Risk Reviews, that addressed estimating and controlling dose for other outage activities. Jobs reviewed included foreign material exclusion controls, insulation removal, scaffolding installation, reactor disassembly, SG ECT, cavity decontamination, and SG secondary side inspections.

The inspectors evaluated the effectiveness of exposure mitigation requirements specified in RWPs and associated ALARA reviews. Jobs reviewed for 2R18 included reactor vessel disassembly (RWP 208-0301, AR2-08-01), SG ECT (RWP 208-0306, AR 2-08-02), motor operated valve maintenance (RWP 227, AR 2-08-11), and scaffolding installation (RWP 231/331, AR 2-08-13). For Unit 3, the radiological controls applied to a containment entry, during power operations, was reviewed (RWP 308-0090/2).

The inspectors evaluated the departmental interfaces between radiation protection, operations, maintenance, and engineering to identify missing ALARA program elements and interface problems. The evaluation was accomplished by reviewing recent ALARA Council meeting minutes, and ALARA 2R18 Challenge Board presentations. The inspectors also attended two pre-job briefings and daily radiation protection department meetings, to assess interdepartmental coordination.

Through job site observations and radiation survey measurements, the inspectors determined if work activity planning included the use of temporary shielding, system flushes, and operational considerations; i.e. scheduling work when SG were filled, to further minimize worker exposure. The inspectors reviewed temporary shielding requests and performed independent measurements on various system components including the pressurizer relief lines, reactor head, SG cubicles, and various reactor building and auxiliary building work areas to determine if temporary shielding was appropriately used.

Problem Identification and Resolution

(2) The inspectors reviewed elements of the licensee's CAP related to controlling personnel exposure in radiologically controlled areas, completed since the last inspection of this area, to determine if problems were being entered into the program for resolution. Included in this review were the dose and dose rate alarm reports, personnel contamination reports, and associated CRs to determine if regulatory limits or performance indicator criteria were exceeded.

The inspectors reviewed CRs, and associated corrective actions, recent Nuclear Oversight field observation reports, and self-assessment reports to evaluate the threshold for identifying, evaluating, and resolving problems in implementing the ALARA program. This review was conducted against the criteria contained in 10CFR20, TS, and the licensee's procedures.

Verification of Dose Estimates and Exposure Tracking Systems

(3) The inspectors reviewed the assumptions and basis for the annual site collective exposure and 2R18 dose projection.

The inspectors reviewed the licensee's method for adjusting exposure estimates, and re-planning work, when actual dose exceeded estimated dose; e.g., alloy 600 inspections and replacing valve 2-SI-247. The inspectors reviewed WIP ALARA reviews and daily dose tracking reports to determine if sufficient, detailed, information was available to support the control of outage project exposures. Included in this review were departmental dose compilations, and individual dose records.

Job Site Inspection and ALARA Controls

(4) The inspectors observed aspects of various activities being performed during 2R18 including fuel movement, containment demobilization, scaffolding removal, insulation re-installation, "A" RCP motor replacement, and valve repairs. The inspectors verified that the appropriate radiological controls were implemented including, radiation protection technician coverage, contamination mitigation, proper dosimetry, and that workers were knowledgeable of radiological conditions.

Source Term Reduction and Control

(5) The inspectors reviewed the current status and historical trends of the Unit 2 source term. Through interviews with the Radiation Protection/Chemistry Manager and the ALARA Supervisor, the inspector evaluated the licensee's source term measurements and control strategies. The inspectors reviewed reactor coolant chemistry data to evaluate the effectiveness of post shutdown source term reduction efforts. Specific strategies being employed included filtration, system flushes, installation of temporary shielding, and chemistry controls.

Radiation Worker Performance

(5) The inspectors observed radiation worker and radiation protection technician performance for selected tasks. Tasks observed included spent resin transfer, reactor cavity decontamination, and a Unit 3 containment entry at power. The inspectors determined that the individuals involved in these jobs were made aware of radiological conditions and ALARA controls that applied to their tasks.

The inspectors reviewed CR's, related to radiation worker and radiation protection technician errors, and PCRs to determine if an observable pattern traceable to a common cause was evident.

Declared Pregnant Workers

(7) The inspectors determined that no declared pregnant workers were employed to perform related activities in the radiologically controlled areas during 2R18.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator (PI) Verification (71151)

.1 Cornerstone: Initiating Events

Inspection Scope (6 Samples)

The inspectors reviewed Dominion submittals for the PIs listed below to verify the accuracy of the data reported. The PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the basis for reporting each data element. The inspectors reviewed portions of the operations logs, monthly operating reports, and LERs, and discussed the methods for compiling and reporting the PIs with cognizant licensing and engineering personnel. Documents reviewed during this inspection are listed in Attachment A.

Unit 2
- Unplanned Scrams, October 1, 2007 – March 31, 2008;
- Unplanned Scrams with Complications, October 1, 2007 – March 31, 2008; and
- Unplanned Power Changes, July 1, 2007 – March 31, 2008.

Unit 3
- Unplanned Scrams, October 1, 2007 – March 31, 2008;
- Unplanned Scrams with Complications, October 1, 2007 – March 31, 2008; and
- Unplanned Power Changes, July 1, 2007 – March 31, 2008.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by Inspection Procedure (IP) 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into Dominion's CAP. This was accomplished by reviewing the description of each new CR and attending daily management review committee meetings. Documents reviewed are listed in Attachment A.

b. Findings

No findings of significance were identified.

.2 Annual Sample**:** Review of Corrective Actions for Unit 3 Tornado Doors

a. Inspection Scope (1 Sample)

The inspectors performed a focused review of the actions taken and planned in response to NCV 05000423/2007005-01, Failure to Ensure Engineered Safeguards Features (ESF) Building Protection from Missiles Generated by a Design Basis Tornado. The review included interviews with the system engineer and maintenance personnel, a walk down of the ESF Building tornado doors and a sample of other tornado doors, and a review of condition reports, work orders, and maintenance rule evaluations associated with the corrective actions to verify completion of corrective actions. Documents reviewed for this inspection activity are listed in Attachment A.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that the two tornado doors that remain open had their rollers replaced with corrosion resistant rollers. The remaining doors are normally closed and are scheduled to be worked in the future. Preventive maintenance frequency on the doors has been increased to three months with a requirement of door closure with manual effort. Additionally, shift managers will be briefed on the mindset that accepted the condition of the doors. The inspectors reviewed the corrective actions and assessed them to be adequate to correct the deficiency.

.3 Semi-Annual Problem Identification & Review (PI&R) Trend Review

a. Inspection Scope (1 Sample)

As required by IP 71152, the inspectors performed a review of the Dominion corrective action program and associated documents to identify trends that may indicate existence of safety significant issues. The inspectors' review was focused on repetitive equipment and corrective maintenance issues, but also considered the results of daily inspector corrective action program item screening.

b. Findings

No findings of significance were identified. No trends were identified that were not already identified by Dominion. The inspectors determined that Dominion's CR's are adequately categorized and trended.

.4 Focused Review of 125VDC Breaker Overcurrent Trip Device Failures

a. Inspection Scope (1 Sample)

The inspector performed a focused review of the actions taken and planned in response to the repeated testing failures of 125 volt direct current (VDC) breaker overcurrent trip devices. The review included interviews with the system engineer, design engineer, maintenance rule coordinator, and maintenance personnel. The inspectors also reviewed CR's, WO's, testing procedures, and maintenance rule expert panel minutes associated with the failures. Documents reviewed for this inspection activity are listed in Attachment A.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that the evaluation of the issue in CR 07-07314 performed an adequate review of the historical failures related to the overcurrent trip devices. Corrective actions from CR-07-07314 were to address testing procedure inadequacies and to evaluate a timely replacement or refurbishment option for the devices. The inspectors reviewed the testing procedure changes and determined that the changes were consistent with the manufacturer's recommendations. The inspectors reviewed the station five year project plan and determined that a replacement or refurbishment plan is scheduled to be completed in the next few years.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 Unit 3 Notice of Unusual Event (NOUE) – 15 gallon per minute (gpm) RCS identified leak into the Refueling Water Storage Tank (RWST)

a. Inspection Scope

On April 5, 2008, at 1:06 p.m., with the reactor in Mode 4, Unit 2 operations responded to a 15 gpm unidentified RCS leak into the RWST shortly after shutdown cooling (SDC) was placed in service. Operations identified the leak after observing that pressurizer level was decreasing and RWST level was increasing at a corresponding 15 gpm rate. Operators entered Abnormal Operating Procedure (AOP) 2568, "RCS Leak," and stopped the RCS leak by isolating ECCS minimum flow to the RWST. Consequently, operations declared HPSI inoperable and entered TS 3.5.3, "Emergency Core Cooling Subsystems (ECCS) for Tave [average temperature] less than 300 F," since the HPSI minimum flow path had been isolated once the leak was isolated. Dominion calculated that approximately 950 gallons of RCS water had leaked into the RWST. Dominion concluded that, since the RWST was vented to the atmosphere, an unplanned and unmonitored radioactive release had occurred. Dominion calculated the unmonitored radioactive release was within the regulatory limit and did not meet the threshold for an additional event declaration, based on the station Emergency Action Level (EAL) unplanned release criteria. At 6:56 p.m., Dominion exited the UE after the leak was ensured to be isolated, shutdown cooling was placed in service, and an unplanned release calculation performed. The inspectors responded to the control room and evaluated the adequacy of operator actions in accordance with approved procedures, TS implications, UE declaration and exit, and other EAL considerations. The inspectors assessed the station's emergency response performance from the control room and in the field. In addition, the inspectors performed walk downs of the ESF to verify vital equipment was operating properly. Documents reviewed for this activity are listed in Attachment A.

b. Findings

Introduction. The inspectors identified a Green NCV of 10CFR50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for Dominion's failure to provide adequate maintenance instructions in the authorized work order (AWO) for replacing the gaskets on the "B" low pressure safety injection (LPSI) pump suction line. Specifically, the AWO did not have torque requirements for the flanged connection. As a result, the flanged

joint was over-torqued, causing the flexitallic gasket to fail. Spiral winding debris from the gasket became lodged in the "B" LPSI pump suction isolation valve (2-SI-432), preventing the valve from closing and causing an unidentified RCS leak in excess of TS limits.

Description. On April 6, 2008, Dominion had shutdown the Unit 2 reactor for refueling. At 12:42 p.m., when placing SDC in service, the operators noted an increase in RCS unidentified leakage in excess of TS limits, resulting in the declaration of an UE. The maximum leak rate was approximately 15 gpm. At 1:56 p.m., the leak was reduced to less than the TS limits by closing 2-SI-659, the ECCS minimum-flow isolation valve.

Dominion troubleshooting efforts determined that valve 2-SI-432 was leaking. On April 18, maintenance opened and inspected 2-SI-432 and found approximately one pound of spiral wound material, stainless steel, and graphite in the body of the valve. The material was determined to be consistent with the spiral winding from a flexitallic gasket. Dominion concluded that the gasket material in the valve body degraded the valve's ability to shut resulting in the leak.

On April 24, maintenance discovered that the two spiral wound gaskets at the "B" LPSI pump suction elbow flange were failed. The flanged joint consisted of two flexitallic gaskets with a spacer between. The graphite filler was missing as well as most of the stainless steel winding. Dominion's root cause investigation concluded that the two gaskets were the most likely source of the spiral winding material found in valve 2-SI-432.

One of the corrective actions because of the spiral wound material inside the "B" SDC heat exchanger in November 2006, under WO M2-06-10599, was the removal of the Unit 2 "B" LPSI pump suction elbow for inspection. Upon disassembly of the flanged joint, maintenance discovered that one of the flexitallic gaskets was unwound and several small pieces of the spiral winding were found and removed. The elbow was reinstalled with new flexitallic gaskets. The WO stated to tighten the fasteners using good mechanical practices and that quantitative torque values were not required. On December 15, 2007, the flanged joint leaked after system restoration and was re-tightened. The pump was restarted and the joint continued to leak, but at a decreased rate. The flanged joint was tightened for a third time using a slugging wrench and the leakage stopped. The performance deficiency was Dominion's failure to provide adequate maintenance instructions for assembling the flanged connection, including appropriate torque values.

Analysis. This finding is more than minor because it is associated with the Human Performance attribute of the Initiating Event Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations. Specifically, Dominion did not ensure that the WO instructions were adequate to prevent excessive torque, causing damage to the flexitallic gasket, and resulting in the introduction of spiral winding material into the LPSI system. The gasket material lodged in the "B" LPSI pump suction isolation valve, prevented the valve from fully closing, and caused an RCS leak in excess of TS limits.

The inspectors conducted a Phase 1 screening in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 1. A quantitative assessment (Phase 2 analysis) was required because the

finding increased the likelihood of a loss of RCS inventory. The Phase 2 analysis was conducted in accordance with IMC 0609, Appendix G, Attachment 2. The conditions of the event most closely represented plant operating state (POS) 1, and was evaluated using Worksheet 5, "SDP for a PWR Plant – Loss of Inventory (LOI) in POS 1 – (RCS Closed)." In accordance with Table 3, "Initiating Event Likelihood (IEL's) for LOI Precursors," an estimated IEL of 1 was assigned. Given that the leakage was directed back to the RWST and was available for inventory make-up, additional credit was assigned for terminating the leak path before RWST depletion. The issue screened as having very low safety significance (Green) because the change in CDF was in the range of low 1E-7. The dominant sequences were: 1) a loss of inventory with a failure of SG cooling coupled with the failure to establish a bleed path; 2) a loss of inventory with a failure to stop the leak coupled with a failure to make-up the RWST; and 3) a loss of inventory with a failure RCS injection coupled with a failure of SG cooling. The finding has a cross cutting aspect in the area of Human Performance, Resources, because Dominion did not ensure complete, accurate, and up-to-date work packages for the replacement of the gaskets in the "B" LPSI pump suction line. [H.2(c)]

Enforcement. 10CFR50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented instructions and procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions and procedures. Contrary to the above, on December 14, 2007, Dominion failed to provide adequate maintenance work package instructions, which resulted in excessive torque of flanged connections and failure of the spiral wound gaskets on the "B" LPSI pump suction line. As a result, gasket material became lodged in valve 2-SI-432, prevented the valve from fully closing, and caused a RCS leak in excess of TS limits. Because this violation is of very low safety significance (Green), and entered this issue into the Dominion CAP, (CR-08-03403), this violation is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy**. (NCV 05000336/2008003-02, Inadequate Maintenance Instructions Causes RCS Unidentified Leakage in Excess of TS Limits)**

.2 Unit 2 Reactor Trip – Load Reject from 100 Percent Power

a. Inspection Scope

On May 22, 2008, Unit 2 tripped following a main turbine load rejection from 100 percent power. The turbine trip resulted moments after lighting struck an electrical power line approximately 2.5 miles off-site. Following the reactor and turbine trip, off-site power automatically swapped from the Unit 2 normal station service transformer (NSST) to the reserve station service transformer (RSST). Operations entered emergency operating procedure (EOP) 2525, "Standard Post Trip Actions." Operators took action in accordance with station procedures to manually trip the "B" steam generator feed pump and closed the feed water block valves for both SG's due to an unexpected main feed regulating valve response. Following the standard post trip actions and event diagnostic chart review, the operating crew transitioned to EOP-2526, "Reactor Trip Recovery." The crew determined that all safety functions were met.

The inspectors responded to the control room and evaluated the adequacy of operator actions in accordance with approved procedures and TS implications. The inspectors performed walk downs and interviewed personnel adjacent to the Unit 2 transformers to verify a lighting strike on-site had not occurred and expected credited off-site power

supplies were operable. Documents reviewed for this inspection activity are listed in Attachment A.

b. Findings

No findings of significance were identified.

.3 Unit 2 Loss of Off-Site Power in Mode 2 and NOUE

a. Inspection Scope

On May 24, 2008, at 9:37 a.m., with the reactor critical in Mode 2, Operations responded to a loss of off-site power (LOOP). The Unit 2 "A" and "B" EDG's started and automatically loaded vital station loads, as designed. The LOOP was caused when the supply breakers for 4160 volt and 6900 volt buses from the RSST unexpectedly opened. The reactor trip occurred as a result of RCP low speed and RCS low flow. Operations implemented EOP 2525, "Standard Post Trip Actions;" then, the crew entered EOP 2528, "Loss of Offsite Power/Loss of Forced Circulation." At 9:45 a.m., the station declared a UE, based on a loss of all offsite power to safety-related vital buses 24C and 24D for greater than fifteen minutes (i.e. EAL PU1). At 11:06 a.m., operations successfully restored off-site power to Facility 2 bus 24C through a credited Unit 3 cross-tie, the Facility 1 safety-related buses remained on the "A" EDG. On May 25, at 12:52 p.m., Dominion exited the UE, after investigating the cause of the LOOP, restoring the RSST and verifying the RSST was a reliable source of off-site power, and establishing forced reactor coolant flow.

The resident inspectors were on-site and responded to the Unit 2 MCR when the event occurred and evaluated the adequacy of operator action in accordance with approved procedures, TS, UE declaration and exit, other EAL consideration, and equipment performance. The inspectors assessed the station's emergency response performance from the control room. In addition, NRC Region I entered the Monitoring Mode and staffed the Incident Response Center to follow the licensee's actions and evaluate performance. Documents reviewed for this activity are listed in Attachment A.

a. Findings

No findings of significance were identified.

.4 Unit 2 Reactor Trip – Loss of Feedwater

a. Inspection Scope

On June 28, 2008, Unit 2 operators manually tripped the reactor, as required, following the loss of both steam generator feed pumps (SGFP). The SGFP's automatically tripped on low suction pressure, due to the isolation of the feedwater heaters, which occurred during main turbine combined intercept valve testing. Following the reactor trip, off-site power automatically swapped from the NSST to the RSST. Operations personnel entered EOP 2525, "Standard Post Trip Actions; after review of the event diagnostic chart, the operating crew transitioned to EOP 2526, "Reactor Trip Recovery." The crew determined that all safety functions were met.

The inspectors reviewed Dominion's event review team report, which determined the cause of the trip to be from the loss of both SGFP's due to low suction pressure. The low suction pressure resulted from divergent feedwater heater level oscillations which occurred during combined intercept valve testing. The inspectors will review the results of Dominion's root cause analysis when it is completed. Documents reviewed for this activity are listed in Attachment A.

.5 (Closed) LER 05000336/2008002-00, Unplanned Limited Condition for Operation Entry, Three Charging Pumps Aligned for Injection with the RCS Temperature Less than 300 Degrees F

On April 13, 2008, at 8:05 a.m., with the plant shutdown in Mode 6, Operations identified that all three charging pumps were aligned and capable of injection into the RCS, with RCS temperature less than 300 degrees F. Operations entered TS 3.1.1.3.b, "Boron Dilution," which stated that a maximum of two charging pumps were permitted in this alignment. The TS was exited at 8:18 a.m. after the "B" charging pump was no longer capable of injection. Dominion entered the condition into their CAP (CR-08-03934) and performed a root cause evaluation (RCE). Dominion determined the unacceptable charging system configuration existed because the charging system tags associated with the TS requirement did not provide adequate guidance. Specifically, the basis for removing one of the charging pumps from service was not clearly indicated on the tags.

This finding was more than minor because it is associated with the Configuration Control attribute of the Initiating Event Cornerstone, and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, TS 3.1.1.3.b, in part, ensures the maximum analyzed flow rate assumed in the UFSAR Chapter 14 boron dilution event analysis is not exceeded.

The inspectors determined the issue is of very low safety significance (Green) in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," since it did not require a quantitative assessment. Specifically, the finding did not increase the likelihood of a loss of RCS inventory, degraded the licensee's ability to terminate a leak path or add RCS inventory or degraded the licensee's ability to recover decay heat removal once it was lost. The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

.6 (Closed) LER 05000423/2007003-00, Reactor Head Vent Valve Circuits Not Isolated From Control Room During Fire Scenario

During the 2007 Unit 3 triennial fire protection team inspection, the inspectors selected the reactor head vent valves for review. On September 27, 2007, Dominion engineers, in reviewing the documentation requested by the inspectors, determined that control circuits for the reactor head vent isolation valves (3RCS*SV8095A and 3RCS*SV8096A) were not fully isolated from the fire area when control was transferred to the ASP. Since control circuit relays for the vent valves were located in main control board 3 in the control room, a fire in the MCR could affect the ability to transfer control of these valves to the ASP. For cold shutdown, these valves were required to open to establish a letdown path for boration to assure cold shutdown reactivity conditions. Dominion relocated the relays for the reactor head vent valves outside of the postulated fire area to correct the condition.

The issue was documented in NRC Inspection Report 05000423/2007007 as a Green NCV. The inspectors determined that the corrective actions taken by Dominion to prevent recurrence appeared adequate. The LER was reviewed and no additional findings were identified. This LER is closed.

.7 (Closed) LER 05000423/2007004-00, Fire Scenario Results in Unanalyzed Condition – Potential Loss of Charging

This LER described a vulnerability identified during the 2007 fire protection triennial team inspection, characterized as URI 05000423/2007007-01, "Control Room Fire Evacuation Procedure." See Section 1R05 of this report for the inspector's review of the LER. This LER is closed.

4OA5 Other Activities

.1 Temporary Instruction 2515/172, Reactor Coolant System Dissimilar Metal Butt Welds

a. Inspection Scope (1 Sample)

The Temporary Instruction (TI) 2515/172 provides for confirmation that owners of pressurized-water reactors (PWR's) have implemented the industry guidelines of the Materials Reliability Program (MRP-139) regarding nondestructive examination and evaluation of certain dissimilar metal welds containing Alloy 600/82/182 in the RCS. The TI requires documentation of specific questions in an inspection report. The questions and responses are included in Attachment B. In summary, Millstone Unit 2 has three RCS hot leg nozzle-to-safe-end-welds (one 12" surge line, one 12" shutdown cooling line, and one 2" letdown line) and 20 RCS cold leg nozzle-to-safe-end-welds (four 12" safety injection system nozzles, eight 36" RCP welds, three 2" SG drain welds, three 2" charging welds, two 3" pressurizer spray welds) which are MRP-139 applicable Alloy 600/82/182. Millstone Unit 2 has submitted two Alternative Requests which are applicable to these welds: Alternative Request RR-89-61, Revision 1, Use of Weld Overlays as an Alternative Repair and Mitigation Technique and Alternative Request RR-89-64, Use of a Limited One-Sided Ultrasonic Examination Technique.

b. Findings

No findings of significance were identified.

.2 Temporary Instruction 2515/166, Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02)

a. Inspection Scope

The inspectors performed an inspection in accordance with TI 2515/166, "Pressurized Water Reactor Containment Sump Blockage," Revision 1. The TI was developed to support the review of licensee activities in response to NRC Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors." Specifically, the inspectors verified that the implementation of the modifications and procedure changes was consistent with the actions discussed in Dominion's letters to the NRC, dated November 15, 2007, February

29, 2008, and May 21, 2008. The February 29, 2008, letter included Dominion's response to the open items from the NRR audit of corrective actions to address GL 2004-02, conducted in January 2007.

The inspectors reviewed the TS and the UFSAR to verify that required changes to the TS had been approved by the NRC, and that the UFSAR had been, or was in the process of being updated to reflect the plant changes. Additionally, the inspectors reviewed a sample of procedures to verify that they were updated to reflect programmatic changes to the facility. Finally, the inspectors discussed details of the containment sump modifications with engineers to verify design control of the modification process. Documents reviewed are listed in Attachment A. Portions of the TI were performed at Unit 2 during the 2006 refueling outage and at Unit 3 during the 2007 refueling outage, which verified the physical modifications to the containment sump. The results of those inspections were documented in Inspection Report Nos. 05000336/2006005 and 05000423/2007003, respectively.

b. Evaluation of Inspection Requirements

The TI requires the inspectors to evaluate and answer the following questions:

1. Did the licensee implement the plant modifications and procedure changes committed to in their GL 2004-02 response?

   The inspectors verified that Dominion had implemented, or was in the process of implementing, the plant modifications and procedure changes committed to in their GL 2004-02 responses. The inspections previously performed in 2006 and 2007 verified the implementation of the sump screen modifications as related to the GL. During this inspection, the inspectors verified that procedures were updated as related to programmatic controls of potential debris sources, and inspections for containment coating degradation. At the time of inspection, inspectors noted that Dominion was still performing chemical effects testing and downstream effects evaluations on both units.

2. Has the licensee updated its licensing basis to reflect the corrective actions taken in response to GL 2004-02?

   The inspectors verified that changes to the facility or procedures, as described in the UFSAR, and identified in Dominion's GL 2004-02 responses, were reviewed and documented in accordance with 10CFR50.59. The inspectors also verified that Dominion had obtained NRC approval prior to implementing those changes that required such approval. Specifically, Dominion had obtained NRC approval prior to implementing changes to the recirculation spray system at Unit 3. Finally, the inspectors verified that required changes to the UFSAR were in the process of being updated at the time of inspection.

Based on the inspectors' review of the hardware modifications, procedure changes, and licensing bases changes, the inspection requirements of the Temporary Instruction are complete and the TI is closed at Millstone Units 2 and 3. In a letter dated July 1, 2008, NRR approved Dominion's request to extend the completion date for the remaining analyses and licensing activities required for GL 2004-02 until September 30, 2008. As of this inspection, the remaining activities include completion of downstream effects

analyses on both units, completion of chemical effects testing and analyses for both units, and determination of whether any additional modifications are needed based on the result of chemical effects testing and analyses.

The TI-2515/166 inspection results, as well as any results of sampling audits of licensee actions, will be reviewed by the NRC staff (Office of Nuclear Reactor Regulation), along with GL 2004-02 responses to support closure of GL 2004-02 and Generic Safety Issue (GSI) -191, "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance." The NRC will notify Dominion by letter of the results of the overall assessment as to whether GSI-191 and GL 2004-02 have been satisfactorily addressed at Millstone Power Station. Completion of TI-2515/166 does not necessarily indicate that Dominion has finished all testing and analyses needed to demonstrate the adequacy of their modifications and procedure changes. As noted above, Dominion has obtained approval of a plant-specific extension that allows for completion of testing, analyses, and, if required, later implementation of plant modifications. Dominion will confirm completion of all corrective actions to the NRC. As part of the process described above to ensure satisfactory resolution of GL 2004-02 and GSI-191, the NRC will track items identified in the TI-2515/166 inspection reports to completion and may choose to inspect implementation of some or all of them.

c. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Robert Griffin, Director, Nuclear Safety and Licensing, and other members of the licensee staff, on July 8, 2008. The licensee acknowledged the conclusions and observations presented.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by Dominion and is a violation of NRC requirements, which meet the criteria in Section VI.A.1 of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV. A listing of documents reviewed is provided in Attachment A.

Millstone Unit 2 TS 3.1.1.3, "Boron Dilution", requires a maximum of two charging pumps capable of injecting into the RCS whenever the temperature of one or more of the RCS cold legs is less than 300 F.

Contrary to the above, on April 13, 2008, from approximately 2:00 a.m. to 8:18 a.m., all three charging pumps were aligned and capable of injection into the RCS while in Mode 6. This finding was entered into Dominion's CAP (CR-08-03934). The details of this issue were discussed in Section 4OA3.4 of this report.

ATTACHMENT A: SUPPLEMENTAL INFORMATION

ATTACHMENT B: TI 172 DOCUMENTATION QUESTIONS FOR MILLSTONE UNIT 2

ATTACHMENT A

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

G. Auria	Nuclear Chemistry Supervisor
B. Bartron	Supervisor, Licensing
J. Cambell	Manager, Security
C. Chapin	Supervisor, Nuclear Shift Operations Unit 2
A. Chyra	Nuclear Engineer, PRA
L. Crone	Supervisor, Nuclear Chemistry
C. Dempsey	Assistant Plant Manager
M. Finnegan	Supervisor, Health Physics, ISFSI
R. Griffin	Director, Nuclear Station Safety & Licensing
W. Gorman	Supervisor, Instrumentation & Control
J. Grogan	Assistant Plant Manager
A. Jordan	Site Plant Manager
J. Kunze	Supervisor, Nuclear Operations Support
J. Laine,	Manager, Radiation Protection/Chemistry
J. Langan	Manager, Nuclear Oversight
P. Luckey	Manager, Emergency Preparedness
R. MacManus	Director, Engineering
M. O'Connor	Manager, Engineering
A. Price	Site Vice President
J. Semancik	Manager, Operations
S. Smith	Supervisor, Nuclear Shift Operations Unit 3
J. Spence	Manager, Training
S. Turowski	Supervisor, Health Physics Technical Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Open and Closed

05000423/2008003-01	NCV	Fire Protection Deficiency Resulting in Potential Loss of All Charging Pumps - (Section 1RO5.2)
05000336/2008003-02	NCV	Inadequate Maintenance Instructions Causes Reactor Coolant System Unidentified Leakage in Excess of Technical Specification Limits - (Section 4OA3.1)
05000423/2007003-00	LER	Reactor Head Vent Valve Circuits not isolated from control Room During Fire Scenario - (Section 4OA3.6)
05000423/2007004-00	LER	Reactor Head Vent Valve Circuits not isolated from control Room During Fire Scenario - (Section 4OA3.7)
05000336/2008002-00	LER	Unplanned LCO Entry-Three Charging Pumps Aligned for Injection with the RCS Temperature less than 300 Degrees F - (Section 4OA3.5)

Closed

05000423/2007007-01	URI	Control Room Fire Evacuation Procedure - (Section 1R05)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

AOP 2560, Storms, High Winds and High Tides, Revision 010-04
AOP 3569, Severe Weather Conditions, Revision 016-00
C OP 200.8, Response to ISO New England/CONVEX Notifications and Alerts, Revision 004
C OP200.6, Storms and Other Hazardous Phenomena (Preparation and Recovery), Revision 002-01
M2-91-08724, Install Service Water Flood Can on B Service Water Pump Motor
M2-91-08725, Re-terminate B Service Water Pump Motor
MP 2721C, Protection and Restoration of Service Water Pump Motor during a PMH, Revision 007-01
NUC WC 12, 345kV Transmission Facility Testing and Maintenance, Revision 004-01
Procedure AOP 2560, "Storm, High Winds and High Tides"
Procedure OP 2356, "Doors"
SP 2665, Building Flood Gate Inspections, Revision 005-01
Unit 2 Individual Plant Examination for External Events
Unit 2 UFSAR
CR-06-09352 CR-06-07890

Section 1R04: Equipment Alignment

OP 2209B, Revision 000-03, RCS Inventory Tracking
OP 2301C, Revision 010-01, RCS Valve Alignment
OP 2301E, Revision 024-01, Draining the RCS (IPTE)
OP 2330A-001, RBCCW System Alignment, Facility 1, Revision 000-04
OP 2330A-002, RBCCW System Alignment, Facility 2, Revision 000-03
RBCCW System Health Report – First Quarter 2008
RBCCW System Health Report – Fourth Quarter 2007

CR-07-09189	CR-08-04973	CR-08-05150	CR-08-05511	CR-08-05942
CR-08-01695	CR-08-05029	CR-08-05364	CR-08-05835	CR-08-07075

Section 1R05: Fire Protection

Millstone Unit 2 Fire Hazards Analysis, Revision 9

Design Basis Documents
25212-BTP-9.5-1, MP3 Branch Technical Position 9.5-1 Compliance Report, Revision 003

Procedures
EOP 3509, Fire Emergency, Revision 021-00
EOP 3509.1, Basis Information, Revision 011-02
EOP 3509.1, Control Room, Cable Spreading Area or Instrument Rack Room Fire, Revision 011-02
EOP 3509.6, Aux. Bldg. West MCC/Rod Control/ACU Fire, Revision 001-01
OP 3304A, Charging and Letdown, Revision 030

Drawings
12179-EE-51H, Conduit Plan – FPA Sys Aux Bldg – El 24'-6"
12179-EE-51J-5, Conduit Plan – FPA Sys Aux Bldg – El 43'-6", Revision 5
12179-EE-51N, Conduit Plan – FPA System Control Building El. 4'-6", Revision 5

Condition Reports

CR-04-08399	CR-07-10124	CR-07-10363
CR-04-08450	CR-07-10158	CR-01-10614

Miscellaneous Documents

HPES Report M88-006, Damage to "C" Charging Pump as a Result of Improper Valve Alignment, dated 2/08/88

M3-EV-04-0036, Technical Evaluation for 3CHS*LCV112B/C Spurious Valve Movement, Design & Licensing Basis, Revision 3

NUREG-1805, Fire Dynamics Tools (FDT's): Quantitative Fire Hazard Analysis Methods for the US Nuclear Regulatory Commission Fire Inspection Program, Final Report 12/04

NUREG-6850, EPRI/NRC – RES Fire PRA Methodology for Nuclear Power Facilities, Final Report 9/05

Section 1R08: In-service Inspection

Correspondence

Dominion Ltr Serial No. 07-0533, dated 9/27/2007, Alternative request RR-89-64 for use of a limited one-sided ultrasonic examination technique

Dominion Ltr Serial No. 07-0555, dated 10/7/2007, Alternative request RR-89-61, use of weld overlays as an alternative repair and mitigation technique

PWROG Ltr OG-07-88, dated 3/1/2007, MS U2, Primary Pressure Boundary Alloy 600/82/182 Fabrication Detail, LTR-PCAM-07-22 (PA-MSC-0233)

Drawings

Drawing Number: 6001979, Revision 2, MS2 Steam Generator tube location designations

DWG E 18767-164-015, Revision 3. Core support barrel, (thermal shield)

DWG E 234-000, Revision 4.General Arrangement of Primary Piping.

References

NEI 97-06, Steam Generator Program Guidelines

ASME Section XI

Corrective Action Program Documents

CR-07-11161, EPRI has issued new guidance for alloy 600 inspections

CR-08-03981, Debris identified in the #2 steam generator cold leg bowl and tubes

CR-08-04082, Scale on "A" aux feedwater pump piping

CR-08-04259, Foreign material found in RV after removal of core barrel

CR-08-04446, RT indication in weld #10, ref AWO # M207-03605

CR-08-04546, Eddy Current Testing of the Number 1 Steam Generator Five Tubes to Repair

CR-08-04462, M22-CS-059 boric acid leak

CR-08-04464, M22-SI-733 boric acid leak

CR-08-04465, Foreign material identified on core barrel during VT inspection

CR-08-04598, Plugging of additional SG #1 Tubes in 2R18

CR-08-04618, Procedures obtained from an incorrect source

Procedures

54-ISI-364-02, Revision 07/08/2004, Remote Underwater Visual Inspection of Reactor Pressure Vessels, Vessel Internals, and Components in PWR's

C MP 71312, Revision 1, Lifting and Handling Equipment: Overhead Crane Operations

ER-AA-NDE-UT-810, Revision 1, Ultrasonic Examination of Dissimilar Metal Welds In Accordance with ASME Section XI, Appendix VIII

ISI 100-001, Revision 001, Radiographic Procedure for ASME B&PV Code Components
M2 05 04078, In-service Inspection of Steam Generator Tubes
MA-AA-101, Revision 1, Fleet Lifting and Material Handling
MP 2704X, Revision 005-01, Reactor Vessel Stud and Nut Cleaning
MP 2712B1, Revision 010-05, Control of Heavy Loads
MP-24-SIP-GDL01, Revision 001, Steam Generator Independent Qualified Data Analyst Guidelines
MP-MT-1, Revision 000-04, Magnetic Particle Examination Procedure
MP-UT-7, Revision 000-04, Ultrasonic Examination Procedure for Vessel Welds
NDE-RT-01, Revision 8, Radiographic Procedure for ASME B31.1, 1967 edition
NDE-UT-801, Revision 000-00, Ultrasonic Examination Procedure for Carbon Steel Welds
QAP 2.1, Revision 12, Selection, Training, Qualification and Certification of Quality Control Inspection and Test Personnel to ANSI N45.2.6 and ANSI/ASME NQA-1
QAP 2.7, Revision 14, Selection, Training, Qualification, and Certification of Non-destructive Examination Personnel
SI-NDE-08, Revision 1, Qualification and Certification of NDE Personnel for Nuclear Applications
SI-UT-126, Revision 3. Phased Array UT of weld Overlaid Similar and Dissimilar Metal Welds
SP 21172, Revision 006, In-service Inspection of Steam Generator Tubes
UT Procedure UPROC-ENG06, Revision 3, for RPV welds, including shell to nozzle welds.
VPROC ENG00-2-012, Revision 5, Contractor Procedure 03-1275284, Revision 013, Field Procedure for Remote Rolled Plugging Utilizing the LAN SAP Box
VPROC ENG02-008, Revision 17, Procedure and Instructions for Installation of Flexible SG Tube Stabilizer (Contractor procedure 03-1217919A-018)
VT Inspection Procedure 54-ISI-364-02, dated 7/28/2004, Underwater Remote Visual Examination
WPS 03-08-T-805, Revision 0

Other
NDE Data Report for weld MSA-CG-03A, Main Steam pipe to elbow
NDE Data Reports 218-01-064 & 218-01-076 for Steam Generator Shell Welds 1-SC2A and 3.
Work Package M2-07-04890 for the 10 year RPV Inspection.
Work Package M2-07-04891 for the Reactor Vessels Internals ISI 2008 VT Inspection
Doc # ER-MP-BAC-101-1001, Revision 1, Millstone Boric Acid Corrosion Control Planed Inspections
Doc # 25203-ER-06-0027, dated 1/20/2008, MS U2 RFO-17 FAC Structural Evaluation Report
M2-EV-07-0006, Revision 00, Technical Evaluation for the Control & Remediation Plan for Alloy 600
M2-EV-07-0012, Revision 0, Millstone U2 Steam Generator Integrity Degradation Assessment R18)

Section 1R11: Licensed Operator Requalification Program
LORTSE16, Unit 3 Simulator Exam guide, Revision 3 Change 7

Section 1R12: Maintenance Effectiveness
Procedures
ER-AA-MRL-10, Maintenance Rule Program, Revision 2
ER-AA-MRL-100, Implementing Maintenance Rule, Revision 0
Condition Reports
CR-06-00774, Upon Disassembly of 3CHS*P3B, Found the Pump Shaft Sheared into Two Pieces

CR-06-03730, Found "B" Gravity Boration Line Essentially Empty as Follow-Up to CR-06-03712
CR-06-05446, 3CHS-TE89B, Oil Leak
CR-06-05548, 3CHS-LI12 VCT Level Computer Point Unexpectedly Dropped from 50% to 44.1% Momentarily at 1024 on 6-14-06
CR-06-07722, 3CHS*P3B Oil Level ≈1/3 (3CHS*LG1B)
CR-07-00613, Start Failure Annunciator Received when Attempting to Start the SBO Diesel
CR-07-01045, Unplanned LCO Entry
CR-07-03164, Valves 3CHS*V661 and 662 were Found to be Leaking by their Seats, the Valves are Being Used for Isolation of "C" CHS Pump
CR-07-03217, Controller 3CHS*ZT190A is Inoperable
CR-07-03474, "A" Reactor Trip Breaker Fails "As Found" UVTA Time Response
CR-07-03612, 2CHS*LCV112E Motor Tripped During Valve Cycle
CR-07-04662, Snubber Found Locked, Replacement Required
CR-07-04731, After Filling the Charging Pump Cooling System (CCE), the System was discovered to still have Air in the Piping
CR-07-05464, Frequent Occurrences of the SBO Diesel Computer Trouble Alarm
CR-07-06437, FME Found in Boron Make-Up Flow Transmitter 2CHS*FT110
CR-07-07961, Low Level Alarm Received for 3BGF-TK2, SBO Storage Tank, at SBO Local Panel, Window 3-7 "Fuel Oil Storage Tank Level Low"
CR-07-10158, Potential that Fire Damage to LCV112B/C, VCT Outlet Valves, Could Result in Damage to "A" CHS PP Credited for Post-Fire Shutdown
CR-07-10363, Postulated Fire in West MCC / Rod Control Area Could Disable Credited Charging System Functions
CR-07-12018, 3CHS-FI145A ("A" RCP Seal Injection Flow) Indication Spiking Down Approximately 0.6 GPM
CR-08-00534, SBO Control Computer Failed During Engine Start Requiring Emergency Stop of Engine
CR-08-01100, Unplanned TRM Entry MP3 B CCE SW Piping UT Examination Results Show Piping below Nominal Thickness
CR-08-01563, 3CCE*RV43B has Seat Leakage of Approximately 90 Drops per Minute
CR-08-01626, MP3 Reactor Makeup Dilution Control is Degraded, Suspect Sticking Control Relay
CR-08-02274, Terminated SPROC ENG08-3-001 (Charging Pump 3CHS*P3A Functional Test) due to Unexpected Noise after Pump Start

System Health Reports

3304A, B, C, & 3330 D, Chemical & Volume Control and Charging Pump Cooling – Category A, 1st Quarter 2008
3346C, SBO Diesel Generator – Category A, 1st Quarter 2008
3406, Reactor Protection System – Category A, 4th Quarter 2007

Miscellaneous

25212-26913, Piping & Instrumentation Diagram High Pressure Safety Injection, Sheet 1, Revision 27
25212-ER-04-0015, MP3 Containment Risk Significant Valve Review, Revision 0
CR-07-04165, 3SIH*MV8813 Stroked into the Backseat Before Breaker Was Open
CR-07-04458, 3SIH*V5 Failed Its Local Leak Rate Test
HPSI Unavailability Data April 2006 to March 2008
Maintenance Rule (a)(1) Evaluation for CVCS: Chemical & Volume Control System (3304), Tracking CR-07-03164, Revision 0

Maintenance Rule (a)(1) Evaluation for CVCS: Chemical & Volume Control System (3304), Tracking CR-07-03612, Revision 0
Maintenance Rule (a)(1) Evaluation for the Motor Control Center System (3344B), Tracking CR-07-07540, Revision 0
Maintenance Rule Functional Failure Evaluation CR-07-01938, CR-07-04165, CR-07-04399CR-07-04504, CR-07-05295, CR-07-06387, CR-07-09670, CR-07-11821, CR-07-11828, CR-08-00166, CR-08-01016
Millstone Unit 3 – Maintenance Rule Scoping Table System 3301, 3308, 3312A
Millstone Unit 3 – Maintenance Rule Scoping Table

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Memo Number: ORE-08-003, Dated March 18, 2008, Cumulative 2R18 Outage Risk Review
Repair of 2-SW-97B Orange Risk Contingency Plant
SPROC OPS08-2-01, Revision 000-00, 2R18 Shutdown Cooling System Total Outage SFP Decay Heat Removal – Orange (ICCE)

Section 1R15: Operability Evaluations

25203-26014, Piping & Instrumentation Diagram Reactor Coolant System, Sheet 1, Revision 35
25203-26015, Piping & Instrumentation Diagram L.P. Safety Injection System, Sheet 1, Revision 34
25203-26015, Piping & Instrumentation Diagram L.P. Safety Injection System, Sheet 2, Revision 36
25203-26015, Piping & Instrumentation Diagram L.P. Safety Injection System, Sheet 3, Revision 26
AOP 2580, Revision 003-02, “Degraded Voltage”
CRED CR-08-04760, Additional Spacer plate Required to be Manufactured for the Suction Piping Associated with “A” LPSI Pump, P42A, Revision 0
DM2-00-0031-08, Replacement Spacer Piece for Removed Start-up Strainers for P42A, P42B, P43A, and P43B
DM2-01-0031-08, Replacement Spacer Piece for Removed Start-up Strainers for P42A, P42B, P43A, and P43B
MO2-012-08, Need to Evaluate the Impact of Foreign Material Discovered in the Primary System During 2R18, Revision 1
OP-AA-102, Revision 1, Operability Determination
RP5, Revision 006-01, Operability Determinations

Section 1R18: Plant Modifications

CR 08-06328
DM2-00-0040-08, 50.59 Screen
DM2-00-0040-08, Modification of Pressurizer Lower Skirt Ventilation & MRI Insulation
MP-20-WP-GDL40, Pre & Post Maintenance Testing for Containment Air Recirculation, Revision 009, Performed 5/8/08
Operational Decision Making Implementation Action Plan for VR11 and VR21
VR11 /VR21 Action Plan

Section 1R19: Post-Maintenance Testing

CR-08-05789, Pressurizer Heaters in Group 3 Showing Signs of Being Open and Grounded
CR-08-05791, Breaker Found tripped in Panel L102
M2-03-01171, Unit 2 “B” control element drive motor cooling fan overhaul
M2-04-06613, Unit 2 “A” reactor coolant pump seal package and motor replacement
M2-06-03153, Unit 2 “B” motor generator set flywheel balancing

M2-07-04365, Inspection/Cleaning and Operational Check of C50
M2-07-04366, Inspection/Cleaning and Operational Check of C50
M2-07-07342, MP2 Pressurizer Heater Replacements
M2-07-07342, Unit 2 Pressurizer heater replacement
M2-07-08118, Unit 2 "C" containment air recirculation cooling unit fan assembly replacement
MP 2720V, Pressurizer Proportional Heater Controller, Revision 002-04
SP 2602E, Pressurizer Heater Capacity Test, Revision 000-00, performed 5/11/08
SPROC ENG07-2-004, Revision 000-03, MP2 Single Phase Main Transformer Isophase Bus and Disconnect Switch Start-up Testing

Section 1R20: Refueling and Other Outage Activities

AOP 2572, Revision 009-02, "Loss of Shutdown Cooling"
AOP 2577, Revision 008-02, "Fuel Handling Accident"
ARP 2590C-134, Revision 000, "Reduced RCS Level"
C MP 720A, Revision 003-02, "Scaffold Erection, Use and Removal"
CR-08-06119, CR-08-06209
EN 21008-005, Revision 013-02, "Millstone Unit 2 Cycle 19 Core Map"
EN 31019, Revision 005-01, "Reactor Startup Monitoring"
Maintenance Form 2701J-118, Revision 0, "Reactor Head Lift"
MP 2705, Revision 006, "Steam Generator Nozzle Dam Installation and Removal"
MP 2705G, Revision 006, Steam Generator Nozzle Dam Installation and Removal"
MP 2705I, Revision 005, "Steam Generator Nozzle Dam Preparations"
MP 2705I, Revision 005, Steam Generator Nozzle Dam Preparations"
MP 2712N1, Revision 010-06, "Control of Heavy Loads"
MP-13-PRA-FAP01.1, Revision 003, "Performing (a)(4) Risk Reviews"
MP-790.3, Revision 011-02, "Control of Heavy Loads"
OP 1397, Revision 013-01, "Steam Generator Nozzle Dams"
OP 2202, Revision 021-03, "Reactor Startup ICCE"
OP 2206, Revision 011-01, "Reactor Shutdown"
OP 2209B, Revision 000-03, "RCS Inventory Tracking"
OP 2272A, Revision 001-01, "Plant Operation during SDC Operation RCS Vented"
OP 2272A, Revision 001-01, "Plant Operation during SDC Operation with RCS Vented"
OP 2272C, Revision 001-02, "Plant Operation in Mode 3 prior to Reactor Startup"
OP 2301C, Revision 010-01, "RCS Valve Alignment"
OP 2301C, Revision 010-01, "RCS Valve Alignment"
OP 2301E, Revision 001-06, "Alternate RCS Vent Path Alignment"
OP 2301E, Revision 003-02, "Preferred RCS Vent Path Alignment"
OP 2301E, Revision 024-00, Draining the RCS (ICCE)
OP 2301F, Revision 003-03, "Draining and Filling the RCS with Reactor Defueled"
OP 2301G, Revision 000-00, RCS Vent Recovery Post Vacuum Fill"
OP 2310B, Revision 000-01, "SDC/SFPC Core Off-Loaded"
OP 2310D, Revision 000-01, "SDC Operation for Reduced Inventory"
OP 2397, Revision 011-01, "Nozzle Dam Control Console Monitoring Data"
OP 3217, Revision 002-01, "RCS Fill (Control Room)"
OP 3217, Revision 003-02, "RCS Fill (Loop1)"
OPS-FH 216, Revision 000-10, "SFP Fuel Handling Operations"
OPS-FH 216, Revision 000-10, "Spent Fuel Handling Operations"
SP 2602A, Revision 006-01, "Manual RCS Leak Rate Determination"
SP 2605I, Revision 008-06, "Containment Close Out Inspection"
SP 26050, Revision 007-01, "Containment Closeout Inspection"

Section 1R22: Surveillance Testing

SP 2613G, Revision 011-03, Integrate Test Facility 1 Components (ICCE)

Sections 2OS1/2OS2: Access to Radiologically Significant Areas/ALARA Planning and Controls

RPM 1.1.2, Revision 5, Radiation Protection Program and ALARA Program
RPM 1.3.8, Revision 8, Criteria for Dosimetry Issue
RPM 1.3.12, Revision 8, Internal Monitoring Program
RPM 1.3.13, Revision 8, Bioassay Sampling and Analysis
RPM 1.3.14, Revision 7, Personnel Dose Calculations and Assessments
RPM 1.4.1, Revision 7, ALARA Reviews and Reports
RPM 1.4.2, Revision 2, ALARA Engineering Controls
RPM 1.4.4, Revision 3, Temporary Shielding
RPM 1.5.2, Revision 4, High Radiation Area Key Control
RPM 1.5.5, Revision 4, Guidelines for Performance of Radiological Surveys
RPM 1.5.6, Revision 3, Survey Documentation and Disposition
RPM 1.6.4, Revision 3, Siemens Electronic Dosimetry System
RPM 1.7.5, Revision 0, Alpha Monitoring
RPM 2.1.1, Revision 5, Issuance and Control of RWP's
RPM 2.1.2, Revision 2, ALARA Interface with the RWP Process
RPM 2.4.1, Revision 6, Posting of Radiological Control Areas
RPM 2.10.2, Revision 11, Air Sample Counting and Analysis
RPM 5.2.2, Revision 10, Basic Radiation Worker Responsibilities
RPM 5.2.3, Revision 5, ALARA Program and Policy
RPM-GDL-008, Revision 0, Electronic Dosimeter Alarm Set Points
OP 2338B, Revision 7, Solid Radwaste System Resin Transfer to SRT

Condition Reports

08-2344	08-3134	08-3682	08-3935	08-4348	08-4608	08-5167
08-2657	08-3254	08-3683	08-4001	08-4385	08-4774	
08-2677	08-3403	08-3699	08-4070	08-4475	08-4835	
08-2976	08-3552	08-3773	08-4250	08-4538	08-4905	
08-2995	08-3586	08-3782	08-4343	08-4542	08-5153	
08-3085	08-3659	08-3821	08-4344	08-4605	08-5161	

ALARA Council Meeting Notes
Meetings conducted: 03/24/08, 04/03/08

Nuclear Oversight Department Reports/Self-Assessments
2R18 Assessment Plan
Field Observation Reports dated: 04/11, 16, 18, 23, & 30/08
MP-SA-08-01, ALARA Long Term Dose Reduction Program Evaluation
MP-SA-08-04, Implementation of the EPRI Alpha Monitoring Guidelines

2R18 ALARA Reviews
2-08-01, Reactor Disassembly
2-08-02, Steam Generator Eddy Current Inspection
2-08-09, Mechanical Maintenance PM/CM's
2-08-11, MOV Testing and Valve Maintenance
2-08-13, Scaffold Installation & Removal
2-08-21, Repair of 2-SI-247

2-08-26, Cavity Decontamination
2-08-29, Pressurizer Heater Replacement
2-08-33, Alloy 600 Weld Overlays

ALARA Challenge Board Briefing Materials
Alloy 600
Containment Coordination
Electrical Maintenance
In-service Inspection
Pressurizer Heater Replacement Project
Radiation Protection
Reactor Refueling
Reactor Vessel 10 year In-service Inspection
Snubber Team
Steam Generator Eddy Current Testing, Cleaning, & Inspection
Systems Team
Valve Team
Weld Team

Personnel Contamination Report
No M2-08-001 (Level 3)

Miscellaneous Reports
2R18 Reactor Cavity Decontamination Plan
Unit 2 Source Term Data
Dose & Dose Rate Alarm Report for the period March1 through May 4, 2008

Section 4OA2: Identification and Resolution of Problems

AOP 3569, Severe Weather Conditions, Revision 016-00
CR-07-11274, Tornado Door Material Condition Impact on Effort Required to Close Doors
CR-07-11707, Tornado Doors Require Mechanical Means to Shut
CR-07-11826, Additional Actions Required to Resolve Tornado Door Material Condition
CR-08-00085, Evaluate Events Involving Security Officers Without Contingency Equipment
CR-08-02199, Apparent Cause Evaluation Quality Performance Indicator
CR-08-02328, Adverse Trend in Emergency Diesel Air Start System Identified
Dominion Nuclear Trend Report Millstone Station 4th quarter 2007
Fourth quarter 2007 CR Review for Trends, System and Components Department
M3-08-04718, SF-24-2A
M3-08-04719, SF-24-7A
Maintenance Rule Expert Panel Meeting Minutes for February 14, 2008
Unit 3 Maintenance Rule Scoping Table, System 3900, Doors and Barriers

Condition Reports

CR-05-13883	CR-06-07999	CR-07-07314	CR-08-04417	
CR-06-07365	CR-07-04801	CR-07-07793	CR-08-04499	

Work Orders

M2 05 00989	M2 05 11466	M2 06 07731	M2 06 07732	M2 08 04100

Vendor Manuals

25212-262-001, Installation, Operation and Maintenance of DC Distribution Boards and Panels, Revision 1
GEI-86157, EC Trip Devices, Revision 1

Drawings
12179-EE-1BA, One Line Diagram 125VDC and 120VAC Distribution System, Revision 26
12179-GM-60-03, Battery Breaker Coordination Curve, Revision 1
25203-30024, Millstone Unit 2 Single Line Diagram 125VDC Emergency and 120VAC Vital System, Revision 26

Procedures
MP 3782DB, AKR-30 and AKR-50 Breaker Preventative Maintenance, Revision 8
PT 21424B, MP2 Type AK Breakers with EC Trip Devices Test, Revision 2

Miscellaneous Documents
Maintenance Rule Meeting Minutes, Dated 3/31/01, 4/19/01, and 6/28/07
Millstone Power Station Five Year Project Plan, Dated 5/14/08
MP2-CD-1493, Unit 2 Determination of Component Safety Classification for 125VDC Electrical Distribution System, Dated 11/14/94
MP3-03-DCC-SAP944, Material, Equipment, and Parts Lists Program, Revision 1
MP3-CD-1115, Unit 3 Determination of Component Safety Classification for 125VDC Electrical Distribution System, Dated 11/14/94
PA85-082-0812GE, 125VDC Coordination Study, Revision 3

Section 4OA3: Followup of Events and Notices of Enforcement Discretion
AOP 2568, Revision 007-03, Reactor Coolant System Leak"
CR-08-03403, While Placing Shutdown Cooling in Service Unit 2 had Increased RCS Leakage Resulting in an Unusual Event Declaration
CR-08-03934, Unplanned LCO Entry
CR-08-07451, June 28, 2008, Unit 2 Manual Reactor Trip
Drawing 25203-26015, Revision 34, Piping & Instrument Diagram L.P. Safety Injection System
EOP 2525, Revision 022-00, Standard Post Trip Actions
EOP 2528, Revision 017-01, Loss of offsite Power Loss of Forced Circulation
Event Review Report, Millstone Unit 2 Increased RCS Leakage when Shutdown Cooling Placed Inservice, CR-08-03403
Event Review Team Report; Millstone 2 Feed Water Heater Level Oscillation & Manual Reactor Trip
LER 05000336-2008002-00, Unplanned LCO Entry, Three Charging Pumps Aligned for Injection with the Reactor Coolant System Temperature Less than 300 Degrees F
MP-26-EPI-FAP06-002, Revision 004-03, Millstone Unit 2 Emergency Action Levels
Unit 2 UFSAR

Section 4OA5: Other Activities
10 CFR 50.59 Evaluations
S2-EV-06-0003, Replacement of ECCS Sump Strainer per Generic Letter 2004-02, Revision 0

10 CFR 50.59 Screened-out Evaluations
DCR M3-05003, Installation of new Containment Sump passive strainer, Revision 0

FSAR Change Requests

07-MP3-024, FSAR Change associated with RSS Pump Start Logic Change DCR M3-04004, Approved 09/17/07

Procedures

CM-AA-CRS-103, Containment Coating Condition Assessment, Revision 0
DCM 03, Plant Changes, Revision 015-04
DNAP-3004, Dominion Program for 10 CFR 50.59 and 10 CFR 72.48 – Changes, Tests, and Experiments, Revision 2
OA 8, Housekeeping of Station Buildings, Facilities, Equipment, and Grounds, Revision 007-03
SP-M2-ME-1034, Specification for Vessel and Piping Insulation for Reactor Coolant System Components for MP2, Revision 1
SP-M2-ME-1037, Specification for Thermal Insulation for MP2, Revision 1

Miscellaneous

Letter from Dominion to U.S. NRC: Generic Letter 2004-002, Request for Extension of Completion Dates for Corrective Actions, dated 11/15/2007
Letter from U.S. NRC to Dominion: RE: Generic Letter 2004-002, Request for Extension of Completion Date for Corrective Actions, dated 12/13/2007
Letter from Dominion to U.S. NRC: Generic Letter 2004-002 Supplemental Response, dated 02/29/2008
Letter from Dominion to U.S. NRC: Generic Letter 2004-002, Request for Extension of Completion Dates for Corrective Actions, dated 05/21/2008
Letter from Dominion to U.S. NRC: Generic Letter 2004-002, Request for Interim Extension of Completion Dates for Corrective Actions, dated 05/22/2008
Letter from U.S. NRC to Dominion: RE: Generic Letter 2004-002, Request for Extension of Completion Date for Corrective Actions, dated 05/29/2008
Letter from U.S. NRC to Dominion: RE: Generic Letter 2004-002, Request for Extension of Completion Date for Corrective Actions, dated 07/01/2008

Section 4OA7: Licensee-Identified Violations

CR-08-03934, Unplanned LCO Entry
LER 05000336-2008002-00, Unplanned LCO Entry, Three Charging Pumps Aligned for Injection with the Rector Coolant System Temperature Less than 300 Degrees F

LIST OF ACRONYMS

2R18	Unit 2 18th Refueling Outage
AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
AOP	Abnormal Operating Orocedure
AR	ALARA Review
ASME	American Society of Mechanical Engineers
ASP	Auxiliary shutdown panel
AWO	Authorized Work Order
BTP	Branch Technical Position
CAP	Corrective Action Program
CCW	Component Cooling Water
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CMEB	Chemical, Mechanical, and Electrical Branch

CONVEX	Connecticut Valley Exchange
CR	Condition Report
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EAL	Emergency Action Level
ECCS	Emergency Core Cooling Systems
ECT	Eddy Current Test
EDG	Emergency Diesel Generator
EOP	Emergency operating procedure
ESF	Engineered Safety Featured
ESF	Engineered Safety Features
gpm	gallons per minute
HPSI	High Pressure Safety Injection
IEL	Initiating Event Likelihood
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	In-service inspection
ISO	Independent System Operator
IVVI	In-Vessel Visual Inspection
kV	kilovolt
LER	Licensee Event Reports
LHRA	Locked High Radiation Area
LOCA	Loss of Coolant Accident
LOI	Loss of Inventory
LOOP	Loss of Off-Site Power
LOSC	Loss of Reactor Coolant Pump Seal Cooling
LPSI	Low Pressure Safety Injection
MCC	Motor Control Center
MCR	Main Control Room
mrem	millirem
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NOUE	Notice of Unusual Event
NRC	Nuclear Regulatory Commission
NSST	Normal Station Service Transformer
OD	Operability Determinations
PARS	Publicly Available Records System
PCR	Personnel Contamination Report
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PM	Preventive Maintenance
PMT	Post Maintenance Testing
Pns	Probability Of Fire Non-Suppression
POS	Plant Operating State
PRA	Probabilistic Risk Assessment
RBCCW	Reactor Building Closed Cooling Water
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RPV	Reactor Pressure Vessel
RT	Radiographic Test

RWP	Radiation Work Permit
RWST	Refueling Water Storage Tank
SDC	Shutdown Cooling
SDP	Significance Determination Process
Seal LOCA	Reactor Coolant Pump Seal Loss of Coolant Accident
SG	Steam Generator
SLOCA	Small Break Loss of Coolant Accident
SRA	Senior Reactor Analyst
SSC	Systems, Structures and Components
SW	Service Water
TS	Technical Specification
UE	Unusual Event
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Testing
VCT	Volume control tank
vdc	Volts Direct Current
WIP	Work in Progress
WO	Work Order

ATTACHMENT B

TI 172 Documentation Questions for Millstone Unit 2

Introduction:

The TI 2515/172 provides for confirmation that owners of pressurized-water reactors (PWR's) have implemented the industry guidelines of the MRP -139 regarding nondestructive examination and evaluation of certain dissimilar metal welds in RCS containing Alloy 600/82/182. The TI requires documentation of specific questions in an inspection report. The questions and responses are included in this Attachment "B".

In summary Millstone Unit 2 has three RCS hot leg nozzle to safe end welds (one 12" surge line, one 12" shutdown cooling, and one 2" letdown) and 20 RCS cold leg nozzle to safe end welds (four 12" safety injection system nozzles, eight 36" RCP welds, three 2" SG drain welds, three 2" charging welds, two 3" pressurizer spray welds) which are MRP-139 applicable Alloy 600/82/182. Millstone Unit 2 has submitted two Alternative Requests which are applicable to these welds: Alternative Request RR-89-61, Revision 1, Use of Weld Overlays as an Alternative Repair and Mitigation Technique and Alternative Request RR-89-64, Use of a Limited One-Sided Ultrasonic Examination Technique.

a. For MRP-139 baseline inspections:

Qa1. Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

A. Baseline UT inspections have been performed on two welds. Weld BPD-C-1001, 2" Nominal Pipe Size (NPS) RCS hot leg letdown nozzle-to-safe end weld, was PDI-UT examined, consistent with the criteria in MRP-139, during the Spring 2005 outage (2R16) with no flaws detected. Weld BSD-C-2001, 12" NPS hot leg shutdown cooling nozzle-to-safe end weld, was UT examined in 2R16 with no flaws detected, but it did not meet the criteria of MRP-139 because of the cast stainless steel safe end material. No credit was taken for this inspection. No other baseline UT inspections have been or will be performed on hot leg welds and all of the hot leg welds are scheduled for weld overlays. The cold leg welds are also scheduled for weld overlays except for the eight RCP cold leg (4 suction, 4 discharge) 36" welds that will be examined under Alternative Request RR-89-64 during the Spring 2008 refueling outage, 2R18. All weld overlays are being applied in accordance with Alternative Request RR-89-61, Revision 1. The Millstone Unit 2 pressurizer was replaced in 2R17 during the Fall of 2006.

Qa2. Is the licensee planning to take any deviations from the MRP-139 baseline inspection requirements of MRP-139? If so, what deviations are planned and what is the general basis for the deviation? If inspectors determine that a licensee is planning to deviate from any MRP-139 baseline inspection requirements, NRR should be informed by email as soon as possible.

A. In lieu of baseline UT inspections, weld overlays will be applied in accordance with Alternative Request RR-89-61, Revision 1 to all welds except the following: Eight RCP cold leg 36" welds which will be UT examined under Alternative Request RR-89-64 during the Spring 2008 outage, 2R18. Limited examination coverage caused by outside diameter geometry and cast stainless steel safe ends are the reason for the request. Providing the request is granted, no deviations from MRP-139 will be taken from the baseline UT

inspections for these eight welds per the guidance provided in MRP-139, Section 5.1.7, which addresses NRC-approved relief requests.

b. For each examination inspected, was the activity:

Qb1. Performed in accordance with the examination guidelines in MRP-139 Section 5.1 for unmitigated welds or mechanical stress improved welds and consistent with NRC staff relief request authorization for weld overlaid welds?

A. Yes. The inspectors observed the UT examination of the B RCP CL suction elbow-to-safe end weld. UT inspections of the eight unmitigated RCP cold leg 36" welds are being performed in accordance with MRP-139 under Alternative Request RR-89-64 during 2R18.

Qb2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

A. Yes. The examiners consisted of one Level III and three Level II personnel who hold current PDI qualifications.

Qb3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. No material deficiencies were identified.

c. For each weld overlay inspected, was the activity:

Qc1. Performed in accordance with ASME Code welding requirements and consistent with NRC staff relief requests authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install the weld overlays?

A. The inspectors observed the weld overlays for items 1, 2, and 3 listed below. The weld overlays were performed in accordance with ASME Code welding requirements that are contained in the licensee's Alternative Request RR-89-61, Revision 1. The request has been submitted along with responses to NRC staff RAI's and is still under NRR staff review for approval. The request covers all weld overlays scheduled for 2R18 and the Fall 2009 refueling outage, 2R19. Due to ALARA concerns, five weld overlays are being applied instead of the original six that were scheduled in this request for 2R18 and the remaining 10 welds are scheduled for weld overlays in the Fall 2009 refueling outage. The welds being repaired by overlays during 2R18 are:

1. BPS-C-1001, 12" NPS RCS hot leg nozzle-to-safe end surge line weld
2. BSD-C-2001, 12" NPS RCS hot leg shutdown cooling nozzle-to-safe end weld
3. BSI-C-2001, 12" NPS RCS cold leg safety injection loop 2A weld
4. BCH-C-1001, 2" NPS RCS cold leg charging to loop 1A nozzle-to-safe end weld
5. BCH-C-2001, 2" NPS RCS cold leg charging to loop 2A nozzle-to-safe end weld

Qc2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

A. Welders were qualified in accordance with ASME Section IX. Manual PDI-UT phased array was performed on the weld overlays for the 12" NPS welds. PDI-UT was performed on the

weld overlays for the 2" NPS welds. All personnel conducting the post weld overlay UT inspection were PDI qualified under the Structural Integrity Quality Procedure: Quality and Certification of NDE Personnel for Nuclear Applications, SI-NDE-08, Revision 1.

Qc3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. No pre-weld overlay UT was performed and no deficiencies were discovered during post weld overlay PDI-UT examination.

d. For each mechanical stress improvement used by the licensee during the outage, was the activity performed in accordance with a documented qualification report for stress improvement processes and in accordance with demonstrated procedures? Specifically:

Qd1. Are the nozzle, weld, safe end, and pipe configurations, as applicable, consistent with the configuration addressed in the Safety Injection (SI) qualification report?

A. N/A, mechanical stress improvement was not used.

Qd2. Does the SI qualification report address the location radial loading is applied, the applied load, and the effect that plastic deformation of the pipe configuration may have on the ability to conduct volumetric examinations?

A. N/A

Qd3. Do the licensee's inspection procedure records document that a volumetric examination per the ASME Code, Section XI, Appendix VIII was performed prior to and after the application of the SI?

A. N/A

Qd4. Does the SI qualification report address limiting flaw sizes that may be found during pre-SI and post-SI inspections and that any flaws identified during the volumetric examination are to be within the limiting flaw sizes established by the SI qualification report?

A. N/A

Qd5. Performed such that deficiencies were identified, dispositioned, and resolved?

A. N/A

e. For the in-service inspection program:

Qe1. Has the licensee prepared an MRP-139 ISI program? If not, briefly summarize the licensee's basis for not having a documented program and when the licensee plans to complete preparation of the program.

A. Yes. The licensee has an MRP-139 ISI program, which is separate from the ASME Section XI ISI program. Welds will be added to the Section XI ISI program when mitigation or repair/replacement activities have been completed. In the interim, the licensee has a documented technical evaluation M2-EV-07-0006, Revision 00, *Technical Evaluation For*

the Control and Remediation Plan for Alloy 600, which contains the strategy for all alloy 600 welds at Millstone Unit 2. This plan includes inspections, mitigation, and/or repair/replacement activities.

Qe2. In the MRP-139 in-service inspection program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

A. Yes. All welds are categorized per MRP-139 requirements as applicable.

Qe3. In the MRP-139 in-service inspection program, are there in-service inspection frequencies, which may differ between the first and second 10-year intervals after the MRP-139 baseline inspection, consistent with the in-service inspection frequencies called for by MRP-139?

A. All welds are scheduled either for mitigation or inspections to the end of the current 10-year inspection interval which ends on March 31, 2010.

Qe4. If any welds are categorized as H or I, briefly explain the licensee's basis for the categorization and the licensee's plans for addressing potential PWSCC.

A. Two welds are categorized as Category H and are 12" hot leg welds that cannot be PDI/MRP-139 UT examined due to their geometric configurations and cast stainless steel material. Weld overlays are being applied to each of these welds during the current refueling outage, 2R18. The Category I welds are all cold leg welds that also cannot be PDI/MRP-139 UT examined due to cast stainless steel and geometric configurations. The first group consists of four 12" safety injection welds to the RCS. Weld overlays are being applied to each of these welds during 2R18 and 2R19. The next group of welds consists of eight RCP cold leg 36" welds that will be UT examined under Alternative Request RR-89-64 during 2R18 due to their cast stainless steel safe ends and their geometric configurations. No plan is in place at this time for the mitigation methods to be used for these large diameter welds. All weld overlays will be applied in accordance with Alternative Request RR-89-61, Revision 1.

Qe5. If the licensee is planning to take deviations from the in-service inspection requirements of MRP-139, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

A. No deviations are planned for any ISI of the welds to MRP-139. Alternative Request RR-89-64 will provide any needed deviation to the ISI requirements needed for the eight RCP cold leg 36" welds.