April 17, 2006

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

SUBJECT: MILLSTONE POWER STATION - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000336/2006006 AND 05000423/2006006

Dear Mr. Christian:

On March 3, 2006, the U. S. Nuclear Regulatory Commission (NRC) completed a team inspection at the Millstone Power Station, the enclosed report documents the inspection findings, which were discussed on March 3, 2006, with Mr. J. Alan Price and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, and compliance with the Commission's rules and regulations and the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observation of activities, and interviews with personnel.

On the basis of the sample selected for review, the inspectors concluded that in general, problems were properly identified, evaluated, and corrected. There were five Green findings identified during the inspection: three associated with ineffective problem identification, one associated with prioritization and evaluation of issues, and one associated with ineffective corrective actions. The three findings associated with ineffective problem identification included the failure to perform evaluations for boric acid leaks, failure to include acceptance criteria in turbine-driven auxiliary feedwater pump maintenance procedures, and the inadequate evaluation of the suitability of a charging pump discharge dampener modification. The finding associated with prioritization and evaluation of issues included failure to evaluate and correct turbine-driven auxiliary feedwater pump governor control valve stem binding problems that resulted in overspeed trips. The finding associated with ineffective corrective actions included the failure to implement effective corrective actions associated with repetitive leak rate testing failures of a containment isolation valve.

These findings were determined to be violations of NRC requirements. However, because of their very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these non-cited violations, you should provide a response with the basis for your denial within 30 days of the date of this inspection report, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region I; the

Director, Office of Enforcement, U. S. Nuclear Regulator Commission,
Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Millstone Facility.

In addition, examples of minor problems were identified including the failure to retain quality assurance records and performing post-maintenance testing on a safety-related component using a minor work control procedure.

In accordance with 10 CFR 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 NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Paul G. Krohn, Chief
Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000336/2006006 and 05000423/2006006
w/Attachment: Supplemental Information

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Enclosure

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-336, 50-423
License No.:	DPR-65, NPF-49
Report No.:	05000336/2006006 and 05000423/2006006
Licensee:	Dominion Nuclear Connecticut, Inc.
Facility:	Millstone Power Station, Units 2 and 3
Location:	Waterford, CT 06385
Dates:	February 13 - 17, 2006 and February 27 - March 3, 2006
Inspectors' Leader:	Mark A. Giles, Senior Resident Inspector, DRP
Inspectors:	Silas Kennedy, Resident Inspector, DRP Todd Fish, Operations Engineer, DRS Peter Presby, Operations Engineer, DRS Jennifer Bobiak, Reactor Inspector, DRS Sammy McCarver, Reactor Inspector, DRS
Approved by:	Paul G. Krohn, Chief Reactor Projects Branch 6 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000336/2006-006, IR 05000423/2006-006; 2/13/06 - 3/3/06; Millstone Nuclear Plant, Units 2 and 3; biennial baseline inspection of the identification and resolution of problems. Violations were identified in the areas of effectiveness of problem identification, prioritization and evaluation of issues, and effectiveness of corrective actions.

This inspection was conducted by regional and resident inspectors. Five Green findings of very low safety significance were identified during this inspection and were classified as non-cited violations. These findings were evaluated using the significance determination process (SDP).

Identification and Resolution of Problems

The inspectors identified that the licensee was effective at identifying problems and entering them into the corrective action program (CAP). The licensee's effectiveness at problem identification was evidenced by the relatively few deficiencies were identified by external organizations (including the NRC) that had not been previously identified by the licensee, during the review period. The licensee effectively used risk in prioritizing the extent to which individual problems would be evaluated and in establishing schedules for implementing corrective actions. Corrective actions, when specified, were generally implemented in a timely manner. Licensee audits and self-assessments were found to be generally effective. On the basis of interviews conducted during this inspection, workers at the site felt free to input safety concerns and issues into the CAP program.

The inspectors, however, identified that the licensee failed to identify certain issues including errors in implementing the established boric acid corrosion control program (in light of a Problem Identification and Resolution (PI&R) site assessment that was performed in November 2005 that considered this area); the failure to include industry guidance associated with a turbine-driven auxiliary feedwater pump control valve critical measurement in a maintenance procedure, and inadequate design scoping associated with a modification that installed discharge dampeners in the Unit 2 charging system. The inspectors also concluded that following identification and documentation of excessive Unit 3 TDAFW pump internal stuffing box wear in April 2005, the licensee failed to evaluate and understand the condition so as to prevent a recurring overspeed trip failure that occurred on January 9, 2006. In addition, it was determined that corrective actions associated with local leak rate testing were incomplete in that the actions did not prevent the repetitive failure of a containment isolation valve.

The use of the CAP by the security organization was also inspected and the results of this inspection are contained in NRC Inspection Report 05000336/2006007, 05000423/2006007.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" for Dominion's failure to follow Boric Acid Corrosion Control Program (BACCP) procedures. Specifically, plant personal routinely failed to perform boric acid

leak evaluations as required per Dominion procedure DNAP-1004, "Boric Acid Corrosion Control Program," despite the specified threshold having been met.

This finding is more than minor because it is associated with the Initiating Events Cornerstone attribute of human performance and it affects the cornerstone's objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The licensee entered this condition into the corrective action program as CR-06-02088. This finding was characterized as a loss-of-coolant-accident (LOCA) initiator and was determined to be of very low safety significance (Green) because it did not result in exceeding the Technical Specification limit for identified rector coolant system (RCS) leakage or affect other mitigation systems resulting in a total loss of their safety function. Corrective actions included a planned revision to the Boric Acid Corrosion Control program to ensure evaluations are performed and documented. In addition, the licensee conducted a Boric Acid Corrosion Control program peer review using another nuclear power station boric acid program owner. This finding is related to the cross-cutting area of human performance in that on at least 22 occasions, station personnel did not follow established station procedures requiring boric acid evaluation. (Section 4OA2.1.c.1)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure to take effective corrective action to prevent a repeat failure of the Unit 3 turbine-driven auxiliary feedwater (TDAFW) pump. Specifically, following identification and documentation of excessive internal stuffing box wear, which was identified following an overspeed trip event that occurred in April 2005, the licensee failed to fully evaluate this condition which was later documented as a contributing cause to a recurring failure that occurred on January 9, 2006. The licensee entered this condition into their corrective action program as CR-06-00244. Corrective actions for this issue included repacking of the TDAFW pump governor control valve, repair of a cam plate, and plans to conduct a stuffing box repair within three months of the January 2006 pump failure.

  This finding is more than minor because it is associated with the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because the degraded stuffing box was not adequately evaluated and corrected in April 2005, the reliability of the TDAFW pump was adversely affected. Following Phase 1, 2, and 3 SDP evaluations, this finding was determined to be of very low safety significance (Green) since TDAFW pump recovery credit was given during a restart attempt that would occur during a design basis event. This finding is related to the cross-cutting area of problem identification and resolution in that the licensee did not fully evaluate and correct an identified degraded condition. (Section 4OA2.2.c.1)

- Green. The inspectors identified a Green NCV of 10 CFR 50, Criterion V, "Instructions, Procedures, and Drawings " for failing to include appropriate acceptance criteria associated with the measurement of the Unit 3 TDAFW pump governor control valve stuffing box inner diameter in the applicable maintenance procedure. In addition, the maintenance procedure did not specify the equipment required to measure the control valve stem/gap measurements and did not require the recording of measurements needed to verify the maintenance activity had been satisfactorily accomplished in accordance with vendor requirements. The licensee evaluated this issue for immediate operability and entered the issue into their corrective action program as CR-06-02043 and CR-06-02044. Corrective actions included revising the maintenance procedure to update the clearance values as well as instructing maintenance system team personnel on the event relative to utilizing the correct MT&E for the work scope.

  This finding is more than minor because it affected the procedure quality attribute of the Mitigating Systems Cornerstone. Specifically, if left uncorrected, the finding would become a more significant safety concern as governor stuffing box internal diameters continued to increase resulting in additional control valve stem binding issues and associated TDAFW pump overspeed and failure events. The inspectors determined that the finding was of very low safety significance (Green) because the finding did not involve a design or qualification deficiency, represent an actual loss of system or TDAFW pump safety function, or involve seismic, flooding, or severe weather initiating events. This finding is related to the cross-cutting aspect of problem identification and resolution in that the licensee failed to translate appropriate vendor acceptance criteria into the TDAFW governor control valve maintenance procedure despite receipt of new vendor requirements which were published and available in 1999. (Section 4OA2.1.c.2)

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" associated with the Unit 2 charging system pump discharge dampener modification. Specifically, the licensee's review of the design modification failed to adequately consider the suitability of the dampener in that a potential common mode failure mechanism associated with gas binding of the charging pump suction was not considered nor evaluated. This condition was entered into the licensee's corrective action program as CR-06-02382. Corrective actions include performing a root cause to, in part, determine why the design process and other organizational factors that installed the bladders did not identify the potential common mode failure.

  The finding was more than minor because it affected the availability, reliability, and capability objective of the Mitigating System Cornerstone and its associated design control attribute. Specifically, inadequate design control caused Dominion to not fully consider the affects of a discharge dampener bladder failure on the common suction of the Unit 2 charging pumps, a condition which, on January 9, 2006, led to the momentary loss of the charging system. Based upon the IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening worksheets, this

finding required a Phase 2 evaluation since the finding represented a loss of system safety function. Based upon the Phase 2 results, the Region I Senior Reactor Analyst (SRA) conducted a Phase 3 evaluation. The cumulative increase in core damage probability for this condition was determined to be in the low E-8 range and of very low safety significance (Green). This finding has a problem identification and resolution cross-cutting aspect in that evaluations and corrective actions performed by the licensee were inadequate to prevent charging system anomalies despite the identification of a small boric acid leak from the cap of the "B" charging pump discharge pulsation dampener, an indication of a failed pulsation dampener for which no corrective maintenance was performed. (Section 4OA2.1.c.3)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action", for failure to take adequate corrective actions to prevent repetitive local leak rate test failures associated with the Unit 3 reactor plant chilled water system (CDS) inboard containment isolation valve, 3CDS*CTV40A. As a result, there was a loss of redundancy which reduced reliability of the containment isolation function. This condition was entered into the licensee's corrective action program as CR-05-10651, a condition report which documented a licensee action to create a plan to resolve the failures.

  This finding is more than minor because it is associated with the Barrier Integrity Cornerstone objective of maintaining containment functionality and the attribute of structure/system/component (SSC) and Barrier Performance. The finding is of very low safety significance because there was no actual open pathway in the physical integrity of the reactor containment or an actual reduction of the atmospheric pressure control function of the containment. This finding is related to the cross-cutting area of problem identification and resolution in that the licensee did not implement effective corrective actions to prevent a recurring component failure. (Section 4OA2.3.c.1)

B. Licensee-Identified Violations

None.

Report Details

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (Biennial - 71152B)

.1 Effectiveness of Problem Identification

a. Inspection Scope

The inspectors reviewed the procedures, listed in the Attachment to this report, describing the corrective action program (CAP) at Dominion's Millstone Units 2 and 3 Nuclear Power Plants. The licensee identifies problems by initiating condition reports (CRs) for conditions adverse to quality, human performance problems, equipment non-conformances, industrial or radiological safety concerns, and other significant issues. The CRs are subsequently screened for operability, categorized by priority and significance (Level 1, 2 and N), and assigned appropriately for evaluation and resolution.

The inspectors considered risk insights from the NRC's and Millstone's risk analyses to focus the sample selection and plant tours on risk-significant systems and components. The inspectors reviewed CRs selected across the seven cornerstones of safety in the NRC's Reactor Oversight Process (ROP) to determine if problems were being properly identified, characterized, and entered into the CAP for evaluation and resolution. The inspectors selected items from the maintenance, operations, engineering, emergency planning, security, radiological protection, and oversight programs to ensure that the licensee was appropriately considering problems identified in each functional area. The inspectors used this information to select a risk-informed sample of CRs that had been issued since the last NRC PI&R inspection, which was completed in November 2004. In accordance with NRC inspection procedure 71152, the Unit 2 charging system was selected for an expanded review covering the last five years.

In addition to CRs, the inspectors conducted plant tours and selected items from other processes at Millstone to verify that problems identified in these areas were entered into the corrective action program when appropriate. Specifically, the inspectors reviewed a sample of work requests, engineering documents, operator log entries, control room deficiency logs, operator work-arounds, operability determinations, system health reports, and temporary modifications. The documents were reviewed to ensure that underlying problems associated with each issue were appropriately considered for resolution via the corrective action process. In addition, the inspectors interviewed plant staff and management to determine their understanding of and involvement with the CAP. The CRs and other documents reviewed, and a list of key personnel contacted, are listed in the Attachment to this report.

The inspectors reviewed a sample of the licensee's audits and self-assessments, including the most recent assessment of the CAP, conducted in November 2005, quarterly assessment reports, and departmental self-assessments. This review was performed to determine if problems identified through these assessments were entered into the CAP, and whether the identified issues were dispositioned appropriately

commensurate with the safety significance of the issue. The effectiveness of the audits and self-assessments were evaluated by comparing audit and self-assessment results against self-revealing and NRC-identified findings, and current observations during the inspection.

b. Assessments

The inspectors concluded that the licensee was generally effective at identifying problems and entering them into the corrective action program. The CRs that are written were classified by their significance as Level I, 2, or N. Condition reports classified as a Level I require a root cause evaluation (RCE) and Level 2 CRs require an apparent cause evaluation (ACE). Level N CRs do not typically require a detailed review. The inspectors determined that station personnel demonstrated appropriate knowledge of the corrective action program, and entered identified problems into the program at an appropriate threshold. There were approximately 14,250 CRs generated in 2005. The inspectors did not identify any significant conditions adverse to quality in the maintenance, engineering, or operations tracking systems which did not have a CR associated with them.

Relatively few deficiencies were identified by external organizations, including the NRC, that had not been previously identified by the licensee. Also, during this inspection, there were no instances identified where conditions adverse to quality were being handled outside the corrective action program. Audits and self-assessments were generally thorough; however, the inspectors did identify three missed opportunities to identify issues and enter them into the corrective action program. The first involved the boric acid corrosion control program (BAACP). In review of the fleet procedure that implemented the BAACP, the inspectors noted that evaluations were not being performed as required. In addition other BAACP requirements including having a systematic methodology for trending and tracking boric acid leakers, and the dispositioning of each identified leak as either emergent, monitoring, or no actions required, were not being performed. The licensee performed a PI&R site assessment during November 2005 and had the opportunity to identify these programmatic deficiencies. Secondly, the licensee failed to utilize industry guidance that was made available in 1999. Although this information was referenced in work documents used to perform repairs of a degraded auxiliary feedwater pump governor control valve in April 2005, the licensee failed to translate this guidance into the maintenance procedure at that time although the opportunity existed. Finally, during the implementation of a design modification that installed discharge dampeners in the Unit 2 charging system, although engineering personnel considered the potential for a common-mode failure mechanism associated with gas binding, it was not adequately evaluated for suitability in the specific application.

c. Findings

.1 Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to follow Boric Acid Corrosion Control Program procedures. Specifically, plant personal routinely failed to

perform boric acid leak evaluations as required in Dominion procedure DNAP-1004, "Boric Acid Corrosion Control Program," even though the evaluation threshold criteria contained in that procedure was met.

Description. Licensee procedure DNAP-1004, "Boric Acid Corrosion Control Program," requires that all identified boric acid leaks must be initially reported in the site corrective action system and DNAP 1004, Attachment 1, "Boric Acid Corrosion Control Program Screening," provides severity threshold criteria for performing engineering evaluations on the identified leaks. During the Unit 3 refueling outage (3R10) in October 2005, identified leaks were screened using this Attachment. In several instances, however, the threshold criteria in Attachment 1 was met but plant personnel failed to perform the required evaluations. Instead, plant personnel routinely made value judgements on whether or not an evaluation was needed, despite the criteria for an evaluation as stated in DNAP-1004. For instance, systematic trending and tracking of boric acid leakers and the dispositioning of each identified leak as either emergent, monitoring, or no actions required was not performed. In a sample of refueling outage 3R10 screenings reviewed by the inspectors, 23 leaks met the DNAP-1004 criteria for an evaluation, however, only one was performed. The licensee entered this deficiency into their corrective action program as CR 06-02088. Corrective actions included a planned revision to the Boric Acid Corrosion Control Program to ensure that evaluations are performed and documented. In addition, a peer review from another power station BACCP owner was performed.

Analysis. The performance deficiency was that licensee activities affecting quality were not accomplished in accordance with DNAP-1004, in that the licensee routinely failed to perform boric acid leak evaluations required in that procedure. This finding is more than minor because it is associated with the Initiating Events cornerstone attribute of human performance and it affects the Initiating Events cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding is similar to Inspection Manual Chapter (IMC) 0612, Appendix E, non-minor example 4a in that the licensee routinely failed to perform engineering evaluations on similar issues, i.e. boric acid leaks.

This finding was determined to be of very low safety significance (Green) based on IMC 0609 Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." This finding was characterized as a LOCA initiator and was determined to be of very low safety significance (Green) based on IMC 0609 Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations" because it did not result in exceeding the Technical Specification limit for identified rector coolant system (RCS) leakage or affect other mitigation systems resulting in a total loss of their safety function. In addition, this performance deficiency is related to the cross-cutting area of human performance in that station personnel failed to follow the established station BACCP procedure. Although the threshold criteria for performing engineering evaluations was stated in DNAP-1004, screens that met that criteria were not appropriately dispositioned nor the required evaluation performed.

Enforcement. Code of Federal Regulations 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Dominion procedure DNAP-1004, Attachment 1, "Boric Acid Corrosion Control Program Screening," provided threshold criteria for performing engineering evaluations on boric acid leaks. Contrary to the above, in at least 22 instances during October 2005, the licensee failed to accomplish boric acid leak evaluations in accordance with DNAP-1004. This issue was determined to be of very low safety significance (Green) and has been addressed in the licensee's corrective action program (CR-06-02088). Corrective actions included a planned revision to the Boric Acid Corrosion Control Program to ensure that evaluations are performed and documented and a peer review of the BACCP program from the another power station BACCP owner. This violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000336/423/2006006-01, Failure to Perform Evaluations on Boric Acid Leaks)**

.2 Introduction. The inspectors identified a Green NCV of 10 CFR 50, Criterion V, "Instructions, Procedures, and Drawings " for failing to include appropriate acceptance criteria associated with the measurement of the TDAFW pump governor control valve stuffing box inner diameter in a Unit 3 TDAFW pump maintenance procedure.

Description. On January 9, 2006, the TDAFW pump tripped on overspeed during a routine quarterly surveillance. During subsequent troubleshooting, maintenance personnel performed a valve stem motion test and observed stem binding. Following additional troubleshooting, mechanics disassembled the governor control valve and replaced the governor. Subsequent vendor testing showed no problems or concerns with the governor performance. The licensee re-assembled the control valve with a new stem and packing. The licensee conducted a final operability run successfully on January 12, 2006.

The inspectors reviewed MP 3762AB, "Terry Turbine Control Valve Maintenance;" work order M3-06-00466, "3FWA*P2 Control Valve Rebuild and Governor Replacement;" and references associated with the TDAFW pump governor control valve maintenance accomplished on January 10, 2006. The inspectors noted that in April 1999, Dominion made a technical manual change to incorporate vendor guidance for the TDAFW pump governor control valve under design change notice (DCN) DM3-01-0046-99. This DCN provided vendor requirements in response to an industry issue associated with terry turbine governor control valve stem binding. The inspectors identified that the vendor's acceptance criteria for stuffing box inner diameter (ID) was not listed in the maintenance procedure. As a result, this critical dimension was not taken into account prior to the re-assembly of the control valve on January 10, 2006.

In addition, the inspectors noted that the Maintenance and Test Equipment (M&TE) required to perform critical measurements was not listed in the maintenance procedure. Specifically, the micrometer required to measure stem/spacer gap measurements was

not listed in the procedure as M&TE required to accomplish this task. As a result, the micrometer used to take stem/spacer gap measurements on January 10, 2006, during the governor control valve re-assembly was not accurate enough to ensure that the measurements met the acceptance criteria. The vendor required a minimum cold gap measurement of 0.0015 inches to prevent stem binding due to thermal expansion as identified in NRC Information Notice 98-24, “Stem Binding in Turbine Governor Valves in Reactor Core Isolation Cooling and Auxiliary Feedwater Systems.” The tolerance of the micrometer used was +0.001/-0.0005 inches. The inspectors also identified that the maintenance procedure did not include steps to record some critical dimensions such as stuffing box ID, stem/spacer gap measurements, and stem diameter; thus, these dimensions for the installed valve were not verifiable to ensure the maintenance activity was satisfactorily accomplished in according with the vendor’s requirements. The licensee evaluated this issue for immediate operability and entered this issue into their corrective action program under CR-06-02043 and CR-06-02044.

Analysis. The performance deficiency was the failure to translate stuffing box ID acceptance criteria from the vendor’s technical manual to procedure MP 3762AB, “Terry Turbine Control Valve Maintenance.” In addition, the maintenance procedure did not specify the M&TE required to measure critical dimensions and did not require the recording of measurements needed to verify the maintenance activity was satisfactorily accomplished in according with vendor’s instructions. This finding affected the procedure quality attribute of the Mitigating Systems cornerstone and is considered more than minor because if left uncorrected, the finding would become a more significant safety concern as governor stuffing box internal diameters continued to increase resulting in additional control valve stem binding issues and associated TDAFW pump overspeed and failure events. The inspectors determined that the finding was of very low safety significance (Green) through performance of a Phase 1 SDP in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Specifically, this finding did not involve a design or qualification deficiency, represent an actual loss of system or TDAFW pump safety function, or involve seismic, flooding, or severe weather initiating events. This finding is related to the cross-cutting aspect of problem identification and resolution in that Dominion failed to recognize the need to translate appropriate vendor acceptance criteria into the TDAFW governor control valve maintenance procedure despite receipt of new vendor requirements in 1999.

Enforcement. Code of Federal Regulations 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures and Drawings,” requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Criterion V also requires that instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Contrary to the above, prior to January 2006, Dominion failed to ensure that the Unit 3 TDAFW pump governor control valve maintenance procedure, MP 3762AB, “Terry Turbine Control Valve Maintenance,” included appropriate acceptance criteria for the stuffing box internal diameter. In addition, the maintenance procedure did not specify

the M&TE required to measure critical dimensions and did not require the recording of measurements needed to verify the maintenance activity was satisfactorily accomplished in according with vendor's requirements. This issue was determined to be of very low safety significance (Green) and has been addressed in the licensee's corrective action program as CR-06-02043 and CR-06-02044. Corrective actions included revising the maintenance procedure to update the clearance values to the correct values as well as instructing maintenance system team personnel on the event relative to utilizing the correct MT&E for the work scope. This issue is being treated as an non-cited violation consistent with Section VI.A of the NRC Enforcement Policy **(NCV 05000423/2005006-02, Failure To Include Acceptance Criteria In Maintenance Procedures)**.

.3 Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" associated with the Unit 2 charging system pump discharge dampener modification. Specifically, the licensee's review of the design modification failed to adequately consider the suitability of the dampener modification in that a potential common mode failure mechanism associated with gas binding of the charging pump suction was not considered nor evaluated.

Description. Discharge dampeners were installed on the Unit 2 charging pumps during the fall 2003 refueling outage. These dampeners consisted of a nitrogen-filled rubber bladder contained within a pressure vessel for each of the three charging pump discharge lines. Prior to implementation of the modification, engineers involved in the design development during May and June 2003 considered the potential for nitrogen leakage from a failed bladder back through the pumps affecting the common suction line. However, these concerns were not formally evaluated or addressed in the design package and its associated safety screening (DM-M2-03006). The safety-related functions of the Unit 2 charging pumps are to provide RCS Inventory Control and Reactivity Control during a reactor shutdown.

On December 12, 2005, the licensee identified a small boric acid leak from the cap for the "B" charging pump discharge pulsation dampener. The licensee generated CR 05-13753 to investigate and repair the leak. Dominion incorrectly concluded that the leakage was not due to a failed bladder in the "B" pump pulsation dampener and performed no maintenance. Subsequently, the failure of the "B" charging pump bladder released the pulsation dampener's nitrogen charge, which migrated backwards through "B" charging pump internal check valves, and accumulated in the common suction header for the three positive displacement charging pumps.

On January 9, 2006, operators observed erratic charging header flow on the running "C" pump. The operators attempted to run the standby charging pumps but observed similar indications. Shortly thereafter, all pumps were stopped and the system was declared inoperable. A pump was returned to operation within approximately 1 hour but later the same day Unit 2 again lost all charging header flow. Dominion subsequently determined charging was lost as a result of gas in the suction piping.

Following the January 9, 2006 event, the licensee instituted a compensatory measure to ensure continued charging pump operability (documented in Operability Determination MP2-001-06). The measure was intended to ensure that a potentially failed bladder on an idled pump would be isolated before its nitrogen charge could migrate back through the pump and into the common suction line for all three pumps. Isolation of an idle pump would thus prevent gas binding a running pump. Based on an engineering evaluation of "A" pump performance (NUCENG-06-003), Dominion determined that it would take a minimum of 2.5 hours for nitrogen from a postulated failed "A" pump bladder to migrate back through an idle "A" pump and affect the remaining pumps. However, a test performed on January 14, 2006, for back leakage through the "B" pump, revealed that gas nitrogen migration could occur within 30 minutes of a failure of the "B" bladder. The licensee subsequently addressed the difference in back leakage rates and revised the operability determination and associated compensatory measures accordingly (CR-06-00471).

The inspectors interviewed selected licensed operators on shift who responded to the gas binding event. Based on these interviews, the inspectors determined charging system operating procedures did not provide direction for effective response to gas binding of the charging pumps in that the alarm response procedure (ARP) was the only operating procedure (among normal, abnormal, alarm, and emergency procedures) that implemented the guidance of SOER 97-01. As a result, operator attempts to restore charging header flow led to gas binding the idle charging pumps. Specifically in 1999, in response to recommendations in SOER 97-01, "Potential Loss Of High Pressure Injection And Charging Capability From Gas Intrusion," the licensee added a caution to the charging pump trip ARP for the three charging pumps. The caution directed operators to "consider gas binding" prior to starting an additional charging pump. However, the ARP did not provide explicit guidance for actions necessary to prevent a common mode failure of all pumps if gas binding was suspected nor did it give operators guidance for how they could determine whether gas binding had occurred. Further, the inspectors determined that plant conditions never reached the charging pump trip alarm setpoint during the January 9, 2006 event; the alarm for low charging header flow actuated.

Inspectors determined that the licensee had multiple opportunities to develop adequate procedures for response to a gas-binding event. Dominion Procedure DNAP-3002 required re-evaluation of significant SOERs, which includes SOER 97-01, every two years. This review provided Millstone at least three previous opportunities (2001, 2003, and 2005) to upgrade procedures. An opportunity also existed following a March 2003 Unit 2 loss of charging event. Although the March 2003 event prompted Millstone staff to develop an abnormal operating procedure (AOP) for loss of charging, the procedure was still under development when the January 2006 loss of charging event occurred.

Analysis. The issue of not considering the potential for common-mode failure introduced by the design modification was considered a performance deficiency. In addition, the licensee failed to promptly investigate and repair a degraded bladder identified in December 2005 on the "B" charging pump discharge pulsation dampener. This contributed to the failure of all three charging pumps due to gas binding. However,

since the design modification preceded the failure to repair a degraded bladder, it was considered the root cause of the issue.

This issue is greater that minor because it resulted in the failure of one or more charging pumps and adversely impacted the system's emergency boration and high pressure injection mitigation capability and availability. This finding adversely impacted the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Based upon the IMC 0609, Phase 1 screening worksheets, this finding required a Phase 2 evaluation due to the finding representing a loss of system safety function. Based upon the information gathered by the inspectors, the assumed charging pump unavailability times due to gas binding were: "B" charging pump inoperable from December 12, 2005 to January 9, 2006 (672 hours); "C" charging pump inoperable for approximately 6 hours (total); and "A" charging pump inoperable for approximately 12 hours (total). The inspector performed a Phase 2 evaluation using the Risk-Informed Inspection Notebook for Millstone Unit 2. Based upon the results of the Phase 2 evaluation indicating a potentially greater than Green risk significance, the Region I Senior Reactor Analyst (SRA) conducted a Phase 3 evaluation.

The SRA used the Millstone 2 Standardized Plant Analysis Risk (SPAR) Model, Revision 3.21, to evaluate this finding. Assuming the above stated charging pump unavailability times for the three charging pumps, the cumulative increase in core damage probability for this condition was determined to be in the low E-8 range (very low safety significance). The dominant core damage sequences involves steam generator tube rupture initiating events and the failure of operators to properly isolate the faulted steam generator and depressurize the reactor. The availability of the safety injection pumps as an alternative high pressure injection source mitigated the consequences of the charging pumps being unavailable.

This finding has a problem identification and resolution cross-cutting aspect in that evaluations and corrective actions performed by the licensee were inadequate to prevent charging system anomalies despite the identification of a small boric acid leak from the cap of the "B" charging pump discharge pulsation dampener, an indication of a failed pulsation dampener for which no corrective maintenance was performed.

Enforcement. Code of Federal Regulations 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established for the selection and review of the suitability of application of equipment essential to the safety-related function of components. Contrary to this requirement, Dominion failed to adequately consider the suitability of the dampener modification in that during May and June 2003, a potential common mode failure, gas binding of the charging pump suction, was not fully considered or evaluated. This issue was determined to be of very low safety significance (Green) and has been addressed in the licensee's corrective action program as CR-06-02382. Corrective actions include performing a root cause to, in

part, determine why the design process and other organizational factors that installed the bladders did not identify the potential common mode failure. This issue is being treated as a non-cited violation consistent with Section VI.A of the Enforcement Policy **(NCV 05000336/2006006-03, Inadequate Suitability of Application Evaluation for Dampener Modification)**

In addition to the three green findings mentioned above, the inspectors identified two findings which were determined to be violations of minor significance and are not subject to enforcement action in accordance with the NRC's enforcement policy. The first minor finding was associated with the licensee failure to retain quality assurance records as required by 10 CFR 50, Appendix B, Criterion XVII, "Quality Records." Specifically, corrective maintenance was performed on safety-related valve 3CDS*CTV40, a Chill Water Return Containment Isolation valve, and no maintenance records were retained for this activity. The maintenance consisted of adjusting an actuator stop screw following a failed surveillance valve stroke test, and was performed as minor maintenance which did not require record retention. The second minor finding, pertinent to the same issue, involved the licensee utilization of the minor maintenance process for this work. The licensee's procedure MP-20-WP-GDL10, "Work Identification, Screening, Prioritization, and Process Selection," stated that maintenance activities requiring post-maintenance testing are not eligible candidates for minor work. In light of this requirement, the maintenance mentioned above (which consisted of adjusting the actuator stop screw), was performed as minor maintenance. This constituted a minor violation of Technical Specification 6.8.1 in that the licensee failed to follow the procedure requirement mentioned above.

.2 Prioritization and Evaluation of Issues

a. Inspection Scope

The inspectors reviewed the CRs listed in the attachment to this report to assess whether the licensee adequately prioritized and evaluated problems. These reviews evaluated the causal assessment of each issue (i.e., root cause analysis or apparent cause evaluation); and for significant conditions adverse to quality, the extent of condition, and determination of corrective actions to preclude recurrence. Throughout the inspection, the inspectors attended periodic meetings to observe the CR review process and to understand the basis for assigned significance and root cause levels.

The inspectors also considered risk insights from the Millstone probabilistic risk assessment to help focus the inspection sample. The inspectors selected the Unit 2 charging system for an expanded review of five years. This system was selected because of long standing and ongoing performance issues associated with the system that were revealed in a loss of charging system event that occurred on January 9, 2006.

The inspectors selected a sample of CRs associated with previous NRC NCVs and findings to determine whether the licensee evaluated and resolved problems associated with compliance to applicable regulatory requirements and standards. The inspectors

reviewed the licensee's approach to operating experience (OE), which included an assessment of multiple examples of how effectively OE is used. Operability and reportability determinations associated with CRs were also reviewed.

b. Assessments

The inspectors determined that the licensee, adequately prioritized and evaluated the issues and concerns entered into the CAP. The inspectors concluded that prioritized CRs were based on the safety significance of the issue. Operability determinations and reportability assessments were made promptly once issues were entered into the CAP. The inspectors noted that licensee management was thoroughly prepared during CR screening meetings as evidenced by their probing questions of presenters. Evaluations were generally completed in a timely manner, particularly after the CAP process was revised to establish a standard 30-day deadline for all CR evaluations. Clear guidance has been developed for performing cause evaluations, and multi-level reviews of completed evaluations has resulted in generally high quality evaluations with proposed corrective actions that addressed the identified causes.

The inspectors, however, noted performance deficiencies for a condition adverse to quality associated with the Unit 3 turbine-driven auxiliary feedwater (AFW) governor control valve. Following an AFW overspeed trip event that occurred in April 2005, a degraded condition was identified and entered into the licensee's corrective action program although an engineering evaluation was not performed nor documented at that time. Prior to this inspection, operability had still not been evaluated as required in accordance with the station's operability assessment processes. An operability evaluation, however, was performed when this deficiency was identified by the inspectors and acknowledged by the licensee.

c. Findings

.1 Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to take effective corrective action to prevent a repeat failure of the Unit 3 TDAFW pump. On April 17, 2005, the TDAFW pump tripped on overspeed following an inadvertent reactor trip and safety injection. On January 9, 2006, the TDAFW pump tripped again on overspeed during a routine quarterly surveillance test. The inspectors determined that both events were associated with mechanical stem binding of the TDAFW pump governor control valve.

Description. On April 17, 2005, following an inadvertent reactor trip and safety injection actuation, the TDAFW pump tripped on overspeed. The preliminary cause of the failure was determined to be stem binding of the governor control valve (see NRC Inspection Report 05000423/2005012, Section 2.2). During overhaul of the governor control valve, the licensee found that the stuffing box was worn away internally allowing the spacers and washers housed in the stuffing box to move excessively. This condition was entered into the CAP as CR-05-04012. In addition, maintenance personnel also questioned whether the gap between the stuffing box inner diameter (ID) and the stainless steel washers outer diameter (OD) was acceptable. The licensee contacted

the vendor and discussed these issues. As a result, the spacers and packing were replaced, however, the stuffing box condition was not repaired nor further evaluated. Following replacement of the governor control valve stem and packing, a satisfactory post-maintenance and surveillance test were performed. The TDAFW pump was declared operable on April 22, 2005.

On January 9, 2006, the TDAFW pump tripped again on overspeed during a routine quarterly surveillance. The plant entered a 72-hour technical specification action statement (TSAS) and the licensee formed a root cause evaluation team to investigate this event. The licensee originally attributed the cause to be excess condensate in the supply lines to the TDAFW pump. However, subsequent to the trip, the absence of condensate in the supply lines was verified by ultrasonic inspection. On January 10, 2006, the licensee performed the surveillance again with the same results, the TDAFW pump tripping on overspeed. After the second failed surveillance test, the licensee performed a maintenance run in an effort to further evaluate the TDAFW pump performance. During the maintenance run, maintenance personnel noted that the control valve movement was sluggish and exhibited indications of sticking. Maintenance personnel performed a valve stem motion test and observed stem binding during specific portions of the stem travel. As a result, maintenance personnel cleaned burrs from rough areas on the stem. Another surveillance test was performed and the TDAFW pump tripped on overspeed for the third time. Mechanics disassembled the governor control valve and replaced the governor. Subsequent vendor testing showed no problems or concerns with the governor performance. The licensee re-assembled the control valve with a new stem and new packing. During the refurbishment process, mechanics found that the cam on the governor control valve was worn and not smooth. The cam plate was ground clean and confirmed to have free movement throughout the entire range. The governor control valve was fully reassembled and a final operability run performed successfully on January 12, 2006.

The inspectors reviewed the licensee's root cause evaluation (RCE) associated with the April 2005 and January 2006 events; conducted interviews with RCE inspectors members and system engineers; and reviewed associated work orders and conditions reports. Based on the above, the inspectors concluded that the April 2005 TDAFW pump overspeed trip and the January 2006 overspeed trip were due to stem binding of the governor control valve. Specifically, the inspectors reviewed the technical manual associated with the TDAFW governor control valve and determined that the stuffing box internal dimension exceeded the value required by the vendor. On April 12, 1999, the licensee incorporated vendor guidance for the TDAFW pump governor control valve under design change notice (DCN) DM3-01-0046-99. This DCN provided vendor requirements in response to an industry issue associated with terry turbine governor control valve stem binding. Specifically, Section 8.3, paragraph 7, of the vendor technical manual directed verification of the dimensional adequacy of the governor valve components, referring to the critical fits and dimensions defined in Section 8.6 of this guide. The as-found ID of the stuffing box (1.080 to 1.098 inches) exceeded the required dimension (1.005 inches) as stated in Section 8.6 of the vendor's technical manual. The January 9, 2006, RCE inspectors determined that the governor control stuffing box wear was a contributing cause to the January 9, 2006, TDAFW pump

overspeed trip. Stuffing box wear can accelerate packing wear, which leads to spacing problems and stem binding.

Additionally, the inspectors noted that following completion of the January 2006 RCE, the licensee did not formally disposition the stuffing box degraded condition in accordance with station procedures. Specifically, following the January 2006 RCE team's identification that the degraded stuffing box was a contributing cause of the January 2006 TDAFW pump failure, the licensee did not write a condition report and inform the shift manager as required by DNAP-1408, "Dominion Operability Determination Program," and RP 5, "Operability Determinations." The inspectors discussed this with the licensee and as a result, CR-06-02039 was generated, as well as a Reasonable Expectation of Continued Operability (RECO) to address operability concerns associated with this issue. The licensee's immediate corrective actions for this issue included repacking of the TDAFW pump governor control valve and repair of the cam plate. Additionally, the licensee planed to conduct a repair of the stuffing box within three months of the January 9, 2006, TDAFW pump failure and replace the stuffing box when parts became available.

Analysis. The performance issue associated with this finding is that the licensee failed to take effective corrective action to prevent a repeat failure of the Unit 3 TDAFW pump associated with governor control valve stem binding issues. Specifically, the licensee failed to fully evaluate and correct discrepancies associated with the governor control valve stuffing box discovered in April 2005 which was subsequently determined to be a contributing cause to the January 2006 TDAFW pump overspeed trip.

This finding is more than minor because it is associated with the Mitigating Systems cornerstone and affects the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because the degraded stuffing box was not corrected, the reliability of the TDAFW pump was adversely affected. The inspectors evaluated this finding in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Based on the last successful TDAFW pump run on December 1, 2005, and the failure on January 9, 2006, (a time period of approximately 39 days), the calculated fault exposure time was 19.5 days. In evaluating this finding, the Significance Determination Process (SDP) Phase 1 screening identified that a SDP workbook Phase 2 evaluation was needed because the TDAFW pump was potentially inoperable in excess of its Technical Specification Allowed Outage Time of three days. Since the Phase 2 evaluation exceeded a risk threshold, an NRC Region I Senior Reactor Analyst (SRA) conducted a Phase 3 evaluation to more accurately account for the exposure time. Using the site specific Millstone Standardized Plant Analysis Risk (SPAR) Model, Revision 3.11, the SRA evaluated this finding and determined it to be Green since (due to the specific trip and throttle valve and governor valve reset characteristics and existing procedures) credit was given for recovery of the TDAFW pump during subsequent restart attempts that would be reasonably expected to occur during design basis events. This finding is related to the cross-cutting area of problem identification and resolution in that the licensee did not fully evaluate and correct an identified degraded condition.

Enforcement. Code of Federal Regulations 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, following identification and documentation of excessive Unit 3 TDAFW pump internal stuffing box wear in April 2005, the licensee failed to fully evaluate and understand this condition which was later documented as a contributing cause to a recurring overspeed trip failure that occurred on January 9, 2006. This issue has been entered in the licensee's corrective action program as CR 06-00244. Corrective actions for this issue included repacking of the TDAFW pump governor control valve, repair of a cam plate, and plans to conduct a stuffing box repair within three months of the January 2006 pump failure. This issue is being treated as a non-cited violation consistent with Section VI.A of the Enforcement Policy **(NCV 05000423/2006006-04, Failure to Evaluate and Correct Condition Adverse to Quality Associated with TDAFW Pump).**

.3 Effectiveness of Corrective Actions

a. Inspection Scope

The inspectors reviewed the corrective actions associated with selected CRs to determine whether they addressed the identified causes of the problems. The licensee's timeliness in implementing corrective actions and their effectiveness in precluding recurrence for significant conditions adverse to quality were also reviewed. Furthermore, the inspectors assessed the backlog of outstanding corrective actions to determine if they, individually or collectively, represented an increased risk to the plant. The inspectors also reviewed NCVs and findings issued since the last inspection of the licensee's CAP to determine if issues placed in the program had been properly evaluated and corrected.

b. Assessments

Overall, the inspectors concluded that the licensee's corrective actions for identified deficiencies were typically implemented in a timely and adequate manner. Administrative controls were implemented to ensure that corrective actions were completed as scheduled, and reviews were performed to ensure that actions were implemented as intended. The licensee also conducted in-depth effectiveness reviews for significant issues to determine if the corrective actions were effective in resolving specific issues. The licensee appropriately self-identified ineffective or improper closeout of corrective actions and re-entered the issue into the CAP for further action. The inspectors, however, identified one example where the licensee's implementation of corrective actions was inadequate. This involved ineffective correction actions associated with repetitive local leak rate testing (LLRT) failures on a safety-related

containment penetration isolation valve associated with the Unit 3 Reactor Plant Chilled Water System.

c. Findings

.1 Introduction. A Green NCV of 10 CFR 50, Appendix B, Criterion XVI "Corrective Action" was identified for ineffective corrective actions associated with repetitive failures of local leak rate testing of the Unit 3 Reactor Plant Chilled Water System (CDS) inboard containment isolation valve, 3CDS*CTV40A. This represented a loss of redundancy and reduced reliability of the containment.

Description. In February 2001, during the performance of procedure SP 3612B.4, "Type C LLRT - Penetration No. 116 (I) [3CDS*CTV40A]", valve 3CDS*CTV40A failed its LLRT. The licensee adjusted the valve actuator stop screw and successfully retested the valve. In April 2004, when the licensee performed an LLRT on 3CDS*CTV40A, it again failed its test. For a second time the licensee adjusted the valve actuator stop screw and obtained a satisfactory retest. A third LLRT failure occurred in October 2005 further demonstrating that corrective actions previously taken were ineffective.

The inspectors determined that after the second failure in April 2004, the licensee did not effectively identify the repetitive nature of the failure and the corrective actions taken were not sufficient to prevent repetitive failures. Specifically, the licensee did not determine what caused the actuator stop screw to continue to require adjustment nor did they assess the internal condition of the valve to ascertain whether something internal to the valve was contributing to the LLRT failures. As a result, the actions taken failed to correct the cause of the test failures.

Analysis. The performance deficiency associated with this issue is the failure to implement adequate corrective actions to repair valve 3CDS*CTV40A. Specifically, following the failure that occurred in April 2004, which constituted a repetitive failure for the same component, the licensee failed to identify the cause of the repetitive failure. As a result, adequate corrective actions were not implemented. Traditional enforcement does not apply because there were no actual safety consequences or impacts on the NRC's ability to perform its regulator function, or willful aspects to the violation. However, this issue is more than minor because it is associated with the Barrier Integrity Cornerstone attribute of SSC/Barrier Performance - containment isolation SSC reliability. Unacceptable leakage past this valve resulted in a decrease in operational capability of the containment isolation system and a decrease in reliability of containment isolation SSCs. In accordance with the Reactor Safety SDP, a Phase 2 analysis of this condition was performed using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." Specifically, this issue did not represent an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment. Therefore, the risk of this finding was determined to be of a very low safety significance (Green). This finding is related to the cross-cutting area of problem identification and resolution in that the licensee did not implement effective corrective actions to prevent a recurring component failure.

Enforcement. Code of Federal Regulations 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that conditions adverse to quality, such as failures, are promptly identified and corrected. Contrary to this requirement, the licensee did not take corrective actions to address repetitive failures of the Unit 3 Reactor Plant Chilled Water System inboard containment isolation valve, 3CDS*CTV40A, following February 2001, April 2004, and October 2005 local leak rate test failures. This issue was determined to be of very low safety significance (Green) and has been entered in the licensee's corrective action program as CR 05-10651, a condition report which documented a licensee action to create a plan to resolve the failures. This issue is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy **(NCV 05000423/2006006-05, Failure To Implement Effective Corrective Actions Associated With Repetitive LLRT Failures)**

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

During the interviews with station personnel, the inspectors assessed the safety conscious work environment at the Millstone station. Specifically, the inspectors assessed whether people were hesitant to raise safety concerns to their management and/or the NRC. The inspectors reviewed Millstone's Employee Concerns Program (ECP) to determine if employees were aware of the program and had used it to raise concerns. The inspectors also discussed selected issues with the ECP manager and engineering department management to compare insights from the inspection with Millstone's reviews.

b. Findings and Assessments

No findings of significance were identified.

The inspectors determined that personnel are willing to raise issues, and that there was no direct evidence of an unacceptable work environment. All of the personnel interviewed had an adequate knowledge of the CAP and ECP. No employees indicated that they personally would not raise a concern.

4OA6 Meetings, Including the Exit Meeting

The inspectors presented the inspection results to Mr. Alan Price and other members of licensee management on March 3, 2006. Licensee management acknowledged the results presented. No proprietary information was identified during the inspection.

4OA7 Licensee-Identified Violations

None.

ATTACHMENT: Supplemental Information

In addition to the documentation that the inspectors reviewed (listed in the attachment), copies of information requests given to the licensee are in ADAMS, under accession number ML061070498.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

H. Beeman, System Engineer
A. Campbell, Manager Nuclear Protection Services
J. Chadbourne, Unit 2, CVCS System Engineer
G. Closius, Licensing Engineer
C. Dempsey, Manager Nuclear Maintenance
D. Dodson, Supervisor - Licensing
D. Dougherty, System Engineer
E. Dundon, System Engineer
C. Fortune, Unit 2, Component Engineer
R. Griffin, Acting Director - Operations and Maintenance
P. Grossman, Manager Nuclear Engineering
D. Guarneri, System Engineer
S. Heard, Manager Nuclear Oversight
W. Hoffner, Manager Nuclear Operations
M. Jalbert, System Engineer
K. Kirkman, Operations Support
J. Kunze, Unit 2, Operations Manager
J. Langan, Manager Nuclear Site Engineering
R. MacManus, Director - Engineering
M. Marino, Engineer, Condition Based Maintenance
G. McGovern, Supervisor Nuclear Engineering
D. McNeil, System Engineering
D. Pantalone, Unit 2, Operations Training Instructor
F. Perkins, System Engineer
A. Price, Site Vice President
R. Rogozinski, Nuclear Engineer
W. Saputo, Unit 2, System Engineering
S. Scace, Director - Safety and Licensing
R. Schonenberg, System Engineer
P. Strickland, Unit 2 Shift Manager
J. Themig, Unit 2, Computer Support
A. Vomastek, Employee Concerns Program Specialist
V. Wessling, Supervisor Nuclear Corrective Actions
B. Willkens, Manager Nuclear Organizational Effectiveness

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000336/423/2006006-01	NCV	Failure to Perform Evaluations on Boric Acid Leaks (Section 4OA2.1.c.1)
05000423/2005006-02	NCV	Failure To Include Acceptance Criteria In Maintenance Procedures (Section 4OA2.1.c.2)
05000336/2006006-03	NCV	Inadequate Suitability of Application Evaluation for Dampener Modification (Section 4OA2.1.c.3)
05000423/2006006-04	NCV	Failure to Evaluate and Correct Condition Adverse to Quality Associated with TDAFW Pump (Section 4OA2.2.c.1)
05000423/2006006-05	NCV	Failure To Implement Effective Corrective Actions Associated With Repetitive LLRT Failures (Section 4OA2.3.c.1)

LIST OF DOCUMENTS REVIEWED

Procedures

C MP 797, Valve Packing, Rev 0
CS-2.13, Rev 3, Process Computer Database Changes
CS-5.03, Rev 4, Plant Process Computer PPC Development / Implementation Guidelines for Script, Software, Display and Database Changes
DNAP 1004, BACC Program, Rev 3
DNAP-0104, Dominion Nuclear Self-Assessment Program, Rev 001
DNAP-1408, Dominion Operability Determination Process, Rev 008
DNAP-1604, Cause Evaluation Program, Rev 3
DNAP-1604, Cause Evaluation Program, Rev 003
DNAP-2000, Dominion Work Management Process, Rev 004
DNAP-2001, Equipment Reliability Process, Rev 004
DNAP-3002, Dominion Nuclear Operating Experience (OE) Program, Rev 0
EOP 35 ECA-0.0, Loss Of All AC Power, Rev 020
EOP-35 FR-H.1, Response To Loss Of Secondary Heat Sink, Rev 016-01
MP-24-BACC-FAP01, BACC Outage Inspections, Rev 1
MP-20-OM-GDL01, Forced Outage Management Guideline, Rev 2
MP-24-BACC-SAP01, BACC On-line Examinations, Rev 0
MP-24-BACC-FAP02, BACC Initial Refueling and Forced Outage Inspections, Rev 0
MP-24-BACC-PRG, BACC Program, Rev 1
MP-14-OPS-GDL400, Operations Administrative Procedures
MP-14-OPS-GDL400, Rev. 006, Operations Administrative Procedures
MP-16-CAP-FA01.2, Corrective Action Department Responsibilities, Rev 005
MP-16-CAP-FAP01.1, Condition Report Screening and Review, Rev 008

MP-16-CAP-FAP01.1, Condition Report Screening and Review, Rev 8
MP-16-CAP-FAP01.3, ACR/CR Owner, Action, Owner/Investigator Responsibilities, Rev 009
MP-16-CAP-GDL01, Station Trending, Rev 003
MP-16-CAP-GDL01, Station Trending, Rev 3
MP-16-CAP-SAP01, Condition Report Initiation, Rev 002
MP-16-MMM, Organizational Effectiveness, Rev 010
MP-20-WP-GDL10, Work Identification, Screening, Prioritization, Classification, and Process Selection, Rev 010
MP-20-WP-GDL30, Work Performance
MP-24-MR-FAP750, Maintenance Rule Scoping, Rev 000-03
MP-PROC-OPS-SP3610A.3-001, RHR System Venting and Valve Line-Up - Train A, Rev 006
MP-PROC-OPS-SP3610A.3, RHR System Vent and Valve Line-Up Verification, Rev 007
OP 2304E, Rev. 015-05, Charging Pumps
OP 3322, Auxiliary Feedwater, Rev 020-02
OP 3310A, RHR System, Rev 016-07
OP2326A52, "B" RBCCW Heat Exchanger Maintenance Facility 1 and 2, Rev 000-00
OP2353B, Filling Venting Boric Acid CVCS Piping Components, Rev 001-02
OP3304A, Charging and Letdown, Rev 029-06
OP3314F, Control Building Heating Ventilation Air Conditioning and Chill Water, Rev -020-03
OP3330C, Reactor Plant Chill Water, Rev 008-07
OP3330D, Charging Pump Cooling, Rev 006-04
RAC 12, Rev. 005-01, 50.59/72.48 Screens and Evaluations
SP 2664, Rev. 000-00, Charging Pump Pulsation Dampener Test
SP 2664, Rev. 000-03, Charging Pump Pulsation Dampener Test
SP 2664, Rev. 001-05, Charging Pump Pulsation Dampener Test

Audits and Self-Assessments

Dominion Problem Identification and Resolution at Millstone Power Station, dated ½0/06
Audit 04-13, Environmental Management System (Millstone), dated 11/17/04
Audit 04-12, Nuclear Materials, dated 11/5/04
Audit 04-15, Dominion Oversight Evaluation, dated 9/29/04
Audit 05-06, RP/PCP/CHEM Programs, dated 9/22/05
Audit 05-08, Nuclear Training and Qualifications, dated 11/21/05
Audit 04-08, Radiation Protection & Process Control Programs, dated 9/20/04
Audit 04-07, Corrective Actions, dated 8/4/04
Audit 04-05, Technical Training, dated 5/25/04
Audit 04-10, Document Control, Records, and Procedures, dated 11/3/04
Audit 04-11, Measuring and Test Equipment (Millstone)
Audit 05-038, Operational Configuration Control, dated 12/9/05
Audit 05-03, Operational Alignment, dated 3/17/05
Audit 05-43, Assessment of Station Emergency Response Organization actions for the U3 Alert Declared on 4/17/05
Audit 05-17, Operator Training Program Comprehensive Self-Evaluation, dated 8/11/05
Audit 05-04, Impact of Training on Performance of Supplemental Personnel, dated 6/2/05
Audit 05-02, Shift Technical Advisor Training Program Implementation and Effectiveness, dated 3/14/05

Audit 04-37, Operational Decision-Making Process, dated 12/17/04
Audit 04-14, Operator Training Initial Training Program Effectiveness, dated 6/24/04
Audit 04-21, Fire Brigade Record keeping Overview, dated 8/25/04
Audit 04-10, Millstone 3R09 Refueling Outage Readiness, dated 3/31/04
Audit 04-04, Fire Protection Implementation, 05/27/04
Audit 04-09, Design Control and Engineering Programs, 09/22/04
Audit 04-16, Millstone ISFSI, 03/28/05
Audit 05-04, Fire Protection QA Program, 05/24/05
MP-SA-02-059, Generic Letter 88-05 Commitment Effectiveness, 06/28/02
MP-SA-04-01, System Engineering Implementation of Performance, Monitoring, and Trending Plans, 02/18/04
MP-SA-05-09, Effectiveness of Engineering Quality Review Inspectors, 07/01/05
MP-SA-05-26, System Health Report, 01/05/06

Operating Experience Documents Reviewed

SOER 97-1, Potential Loss of High Pressure Injection and Charging Capability from Gas Intrusion, dated November 28, 1977

Non-Cited Violations (NCV) and Findings (FIN)

NCV 05000336/2004002-01, Failure to Implement Adequate Design Control and Suitably Test a Modification to the Charging System
NCV 05000336/2004002-02, Failure to Correct Safety Injection Tank Leakage
NCV 05000336/2004005-01, Failure to adequately implement procedures for steam generator feed pump testing which led to a reactor trip
NCV 05000423/2004005-03, Failure to implement post maintenance testing to identify improperly performed valve repairs on instrument air dryer system
NCV 05000336/2004005-04, Failure to adequately implement vendor technical manual requirements into written procedures which control the alignment and operation of electrical power sources to vital shutdown cooling components
NCV 05000423/2004006-01, Inadequate corrective actions to prevent repetitive failures of the QSS and RSS containment isolation check valves
NCV 05000336/2004006-03, Failure to adequately implement procedures for draining the RCS
NCV 05000336/2004007-03, Failure to properly establish and implement 10 CFR 50, Appendix B, Criterion XVI, to address repeated lifting of Main Steam
Code Safety Valves
NCV 05000336/2004007-04, I&C technicians and operations personnel did not verify all appropriate prerequisites or perform all applicable procedural steps which then resulted in the inadvertent actuation of a safety-related system
NCV 05000423/2004007-07, Failure to Properly Implement TS 3.8.3.2, Onsite Power Distribution - Shutdown
NCV 05000423/2004007-08, Dominion failed to establish precautions and prerequisites to prevent plant configuration changes that could lead to air entrainment in the RHR system
FIN 05000336/2004008-03 NCV High Concentration of Airborne Radioactive Material During Filter Transfers
FIN 05000336/2005002-01, Failure to adequately address concerns related to freeze protection

of an outdoor temporary instrument air compressor
NCV 05000423/2005002-02, Failure to promptly evaluate and correct a degraded condition associated with the divider plate for all three RPCCW HXs
NCV 05000423/2005002-03, Failure to adequately implement testing procedures for restoring the “A” EDG to service
NCV 05000423/2005002-04, Failure to adequately perform post-maintenance testing on hydrogen recombiner
NCV 05000336/2005002-05, Failure to implement procedures to correctly install temporary cooling to the East 480 volt switchgear
NCV 05000423/2005002-06, Failure to take prompt corrective actions to determine the extent of condition of air trapped in the RHR suction and discharge piping
NCV 05000423/2005003-01, Failure to evaluate exceeding specified fire loading limit for Main Steam Valve Enclosure
NCV 05000336/2005004-01, Failure to take TS action with the “B” EDG inoperable
FIN 05000336,423/2005004-02, Failure to adequately implement operability determination procedure on three occasions
NCV 05000423/2005004-03, Failure to properly correct known water in-leakage into the “B” EDG rocker arm lubricating oil system
NCV 05000423/2005012-01, Failure to Implement Appropriate PMs on the TDAFW Pump Control Valve
FIN 05000423/2005012-03, Improper Event Diagnosis led to E-plan Declaration
NCV 05000423/2005012-04, EOP E-0 Step not performed as required
NCV 05000423/2005012-05, Simulator response did not adequately model MSSV response
NCV 05000423/2005012-06, False or Misleading Control Room Indications
NCV 05000423/2005012-07, Less than adequate corrective actions for potential RCS pressure boundary degradation due to boric acid corrosion

Condition Reports (* designates CRs that were generated due to issues identified by the inspectors)

CR-01-10310	CR-04-02446	CR-04-05733	CR-04-08341	CR-04-10102	CR-05-01233
CR-02-07071	CR-04-02514	CR-04-05384	CR-04-08342	CR-04-10105	CR-05-01281
CR-02-11761	CR-04-02532	CR-04-05822	CR-04-08471	CR-04-10129	CR-05-01767
CR-03-02416	CR-04-03130	CR-04-05857	CR-04-08487	CR-04-10268	CR-05-03354
CR-03-04924	CR-04-03205	CR-04-06166	CR-04-08661	CR-04-10535	CR-05-03527
CR-03-08781	CR-04-03272	CR-04-06419	CR-04-08662	CR-04-10678	CR-05-03723
CR-03-09341	CR-04-03329	CR-04-06464	CR-04-08663	CR-04-10697	CR-05-03735
CR-03-12593	CR-04-03411	CR-04-06473	CR-04-08664	CR-04-10741	CR-05-04113
CR-04-01129	CR-04-03611	CR-04-06608	CR-04-08741	CR-04-10903	CR-05-04124
CR-04-01228	CR-04-03704	CR-04-06615	CR-04-08779	CR-05-00100	CR-05-04127
CR-04-01565	CR-04-03781	CR-04-07015	CR-04-08817	CR-05-00169	CR-05-04129
CR-04-01647	CR-04-03886	CR-04-07144	CR-04-09306	CR-05-00399	CR-05-04130
CR-04-01675	CR-04-04092	CR-04-07158	CR-04-09450	CR-05-00449	CR-05-04132
CR-04-01858	CR-04-04219	CR-04-07402	CR-04-09768	CR-05-00768	CR-05-04133
CR-04-02121	CR-04-04549	CR-04-07405	CR-04-09890	CR-05-00922	CR-05-04135
CR-04-02228	CR-04-04808	CR-04-07836	CR-04-09913	CR-05-00953	CR-05-04136
CR-04-02255	CR-04-05283	CR-04-08130	CR-04-10101	CR-05-01147	CR-05-04138

CR-05-04139	CR-05-09162	CR-05-04998	CR-05-10651	CR-05-12702	CR-06-01330
CR-05-04141	CR-05-10257	CR-05-05122	CR-05-10837	CR-05-12756	CR-06-01635*
CR-05-04154	CR-05-01213	CR-05-05405	CR-05-11043	CR-05-12876	CR-06-01720*
CR-05-04701	CR-05-01281	CR-05-05660	CR-05-11318	CR-05-12877	CR-06-01969*
CR-05-05078	CR-05-01764	CR-05-06640	CR-05-11385	CR-05-12923	CR-06-01989*
CR-05-05976	CR-05-01767	CR-05-07916	CR-05-11413	CR-05-13007	CR-06-01996*
CR-05-06386	CR-05-01796	CR-05-08048	CR-05-11468	CR-05-13474	CR-06-02037*
CR-05-06461	CR-05-03177	CR-05-08252	CR-05-11515	CR-05-13709	CR-06-02039*
CR-05-06982	CR-05-03734	CR-05-08549	CR-05-11544	CR-05-13781	CR-06-02043*
CR-05-06990	CR-05-03926	CR-05-08649	CR-05-11652	CR-05-13342	CR-06-02044*
CR-05-07367	CR-05-04216	CR-05-08829	CR-05-11711	CR-05-13354	CR-06-02067*
CR-05-07753	CR-05-04330	CR-05-09073	CR-05-11811	CR-05-13356	CR-06-02088*
CR-05-08141	CR-05-04331	CR-05-09181	CR-05-12414	CR-06-00233	CR-06-02125*
CR-05-08163	CR-05-04332	CR-05-09254	CR-05-12492	CR-06-00243	CR-06-02128*
CR-05-08322	CR-05-04633	CR-05-10015	CR-05-12544	CR-06-00244	CR-06-02136*
CR-05-08722	CR-05-04663	CR-05-10183	CR-05-12594	CR-06-00439	CR-06-02382*
CR-05-09137	CR-05-04667	CR-05-10322	CR-05-12650		

Maintenance Orders

M2-04-11373	M3 0515982	M3 0402293	M3 0507226	M3 0515410	M3-05-13077
M2-05-07211	M3 0515412	M3 0405217	M3 0507233	M3-01-02534	M3-05-16571
M3 0406795	M3 0515411	M3 9707226	M3 0514896	M3-04-06500	M3-06-00715
M3 0515983	M3 0119266	M3 0410662			

Maintenance Rule Documents:

Maintenance Rule (a)(1) Evaluation for the Unit 3 Service Water System, The Service Water System is (a)(1) for Function 1.01 for Piping Failures, Rev 5
Maintenance Rule (a)(1) Evaluation for the Unit 2 Service Water System, The Service Water System is (a)(1) due to Exceeding Performance Criteria 4a, Rev 1
Maintenance Rule (a)(1) Evaluation for the Unit 3 Service Water System, The Service Water System is (a)(1) for Function 1.01 for Strainer Failures, Rev 2
Maintenance Rule (a)(1) Evaluation for the Unit 3 Containment Isolation System, The Containment Isolation System is (a)(1) for Function 1.01c, Rev 1

Miscellaneous

Just In Time PM review —0619-008
Just In Time PM review —0619-003
Just In Time PM review —0619-002
Just In Time PM review —0619-011
Just In Time PM review —0619-009
Just In Time PM review —0619-010
Just In Time PM review —0619-004
Just In Time PM review —0619-012
Just In Time PM review —0619-006

PM Change and Deferral Request, 2000-1278
PM Change and Deferral Request, 2003-0663
PM Change and Deferral Request, 2004-0133
PM Change and Deferral Request, 2004-0465
PM Change and Deferral Request, 2003-0662
Technical Evaluation M3-EV-05-0028, Rev 0, “Summary of Events and Actions Taken Pertaining to Discovery of Jacket Water in the “B” EDG Rocker Lube Oil System, Between April 2005 and September 27, 2005", October 19, 2005
Technical Evaluation M3-EV-01-0035, Rev 0, “Millstone Unit 3 Service Water System Air Binding at the Auxiliary Building Booster Pumps”, January 2002
Technical Evaluation for Precharge Requirements for MP2 Charging Pump Dampener Bladders M2-EV-04-0009
Technical Evaluation for MP2 Charging Pump Discharge Pulsation Dampener and Relief Valve Discharge Routing Evaluation M2-EV-03-0029
Design Modification DCR M2-03006, MP2 Charging Pumps P-18A, P-18B, and P-18C Pulsation Dampeners
Design Change Notice DM2-02-0306-03, Pre-Charge Pressure of Pulsation Dampeners Contingency
Control Room Logs for 1/9/06-1/10/06
Memorandum, Subject: Millstone Unit 2 Supporting Data for OD MP2-002-06, dated 1/10/2006 From P. F. L’Heureux to R. W. Wells
Operations “Read and Sign”, December 2005, related to PPC Bladder Trouble Alarm
Boric Acid Corrosion Evaluation, Component 3SIL*MV8840, 10/24/05
Closure Notes for A/R 05007284-02, Richard Perry, 03/01/06
Root Cause Evaluation Report, CR-05-03735, Charging System Alternate Minimum Flow System Loss of Valve Packing Integrity, 05/25/05
Task Qualification Record, Boric Acid Corrosion Evaluator, Rev 0
Task Qualification Record, Boric Acid Corrosion Inspector, Rev 0
Unit 3 Service Water Brazed Joint Table with Instrumentation Database, Compiled 02/17/06
Fourth Quarter 2005 CR Review For Trends, dated 1/13/06
Unit 2 - Emergency Diesel Generators
System 3326, Service Water, 3rd Quarter 2005

Operability Determinations

MP2-016-97	MP2-002-06	MP2-080-01	MP2-023-02	MP2-045-03	MP2-012-05
MP2-058-97	MP2-031-00	MP2-090-01	MP2-028-02	MP2-047-03	MP2-001-06
MP2-042-99	MP2-036-00	MP2-012-02	MP2-033-02	MP2-049-03	MP2-001-06
MP2-051-99	MP2-038-00	MP2-014-02	MP2-037-03	MP2-063-04	MP2-002-06
MP2-001-00	MP2-064-01	MP2-020-02	MP2-038-03	MP2-074-04	MP2-030-00
MP2-007-00	MP2-070-01	MP2-021-02	MP2-040-03	MP2-003-05	
MP2-025-00	MP2-071-01	MP2-022-02	MP2-043-03		

Vendor Information

VTM 25212-063-001, Installation, Operation, and Maintenance of Service Water Dual Backwash Strainers, Rev 1

LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
AFW	Auxiliary Feedwater
AOP	Abnormal Operating Procedure
ARP	Alarm Response Procedure
BACCP	Boric Acid Corrosion Control Program
CAP	Corrective Action Program
CDS	Chilled Water System
CR	Condition Report
DCN	Design Change Notice
ECP	Employee Concerns Program
ID	Inner Diameter
IMC	Inspection Manual Chapter
LLRT	Local Leak Rate Testing
LOCA	Loss of Coolant Accident
M&TE	Maintenance and Test Equipment
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OE	Operating Experience
OD	Outer Diameter
PARS	Publicly Available Records
PI&R	Problem Identification and Resolution
RCE	Root Cause Evaluation
RCS	Reactor Coolant System
RECO	Reasonable Expectation of Continued Operations
ROP	Reactor Oversight Process
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
SPAR	Standardized Plant Analysis Risk
SSC	System/Structure/Component
TDAFW	Turbine Driven Auxiliary Feedwater Pump
TSAS	Technical Specification Action Statement