July 27, 2006

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

SUBJECT: MILLSTONE POWER STATION - NRC INSPECTION REPORT
05000336/2006010 AND 05000423/2006010

Dear Mr. Christian:

On June 16, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Millstone Power Station. The enclosed inspection report documents the inspection findings, which were discussed on June 16, 2006, with Mr. A. Jordan 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. In conducting the inspection, the team examined the adequacy of selected components and operator actions to mitigate postulated transients, initiating events, and design basis accidents. The inspection also reviewed Dominion's response to selected operating experience issues. The inspection involved field walkdowns, examination of selected procedures, calculations and records, and interviews with station personnel.

Based on the results of this inspection, no findings of significance were identified. However, a licensee identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy because of the very low safety significance of the violation and because it is entered into your corrective action program. If you contest the 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 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 Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspectors at the Millstone Power Station.

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 Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Lawrence T. Doerflein
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000336/2006010 and 05000423/2006010
w/Attachment: Supplemental Information

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REGION I

Docket Nos.	50-336, 50-423
License Nos.	DPR-65, NPF-49
Report Nos.	05000336/2006010 and 05000423/2006010
Licensee:	Dominion Nuclear Connecticut Inc,
Facility:	Millstone Power Station, Units 2 & 3
Location:	Waterford, CT 06385
Onsite Dates:	May 8-12, 2006 May 22-26, 2006 June 5-9, 2006 June 12-16, 2006
Inspectors:	L. Scholl, Senior Reactor Inspector, Team Leader G. Meyer, Senior Reactor Inspector D. Johnson, Reactor Inspector T. Setzer, Project Engineer T. Sicola, Reactor Inspector R. Cooney, NRC Electrical Contractor D. Prevatte, NRC Mechanical Contractor S. Manzona, NRC Co-Op Student (trainee)
Approved By:	Lawrence T. Doerflein, Chief Engineering Branch 2

Enclosure

SUMMARY OF FINDINGS

IR 05000336/2006010, 05000423/2006010; 05/08/2006 - 06/16/2006; Millstone Power Station Units 2 and 3; Component Design Bases Inspection.

This inspection was conducted by a team of five NRC inspectors and two NRC contractors. One Green licensee-identified finding, which was a non-cited violation (NCV), is included in this report. 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 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee has been 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

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R21 Component Design Bases Inspection (IP 71111.21)

.1 Inspection Sample Selection Process

The team selected risk significant components and operator actions for review using information contained in the Millstone Probabilistic Risk Assessment (PRA) and the U.S. Nuclear Regulatory Commission's (NRC's) Standardized Plant Analysis Risk (SPAR) model. Additionally, the Millstone Significance Determination Process (SDP) Phase 2 Notebook, Revision 2, was referenced in the selection of potential components for review. In general, this included components and operator actions that had a risk achievement worth (RAW) factor greater than 2.0 or a Risk Reduction Worth (RRW) factor greater than 1.005. The components selected were located within both safety related and non-safety related systems, and included a variety of components such as switchgear, inverters, strainers, pumps, generators, transformers and valves. The components selected involved 15 Unit 2 and 3 plant systems and are discussed in section 1R21.2.

An initial list of 100 components was created for each unit based on risk considerations. A margin assessment was then performed to narrow this down to 22 components for a detailed design review. The samples were evenly split between units 2 and 3. This design margin assessment considered original design issues, margin reductions due to modifications, or margin reductions identified as a result of material condition/equipment reliability issues. These included items such as failed performance test results, significant corrective action history, repeated maintenance, maintenance rule (a)(1) status, operability reviews for degraded conditions, NRC resident inspector input of equipment problems, system health reports and industry operating experience. Consideration was also given to the uniqueness and complexity of the design and the available defense-in-depth margins. During the detailed design reviews, the team verified the design bases were correctly implemented for the selected components. An overall summary of the reviews performed and the specific inspection findings identified are included in the following sections of the report.

.2 Results of Detailed Reviews

.2.1 Detailed Component Design Reviews

.2.1.1 Turbine Driven Auxiliary Feedwater Pump 2AFW-P4 (Unit 2)

a. Inspection Scope

The turbine driven auxiliary feedwater pump (TDAFP) provides feedwater to the steam generators following the loss of main feedwater system and is the only auxiliary

feedwater pump that is available during the loss of all alternating current (AC) power. The team conducted a walkdown of the pump and reviewed design documents, calculations, in-service testing (IST) criteria and results, vendor manuals, maintenance history, design changes and condition reports. The team interviewed system engineers, IST engineers, predictive maintenance engineers and operations personnel to gain an understanding of recent maintenance issues and the overall reliability of the pump. The team performed a detailed review of a March 29, 2006 event during which the pump failed when the outboard bearing overheated during a post-maintenance test. The team also reviewed the associated root cause evaluation (M-06-03071) and interviewed staff members involved in its development.

b. Findings

No findings of significance were identified.

.2.1.2 Containment Sump Outlet Header Isolation Motor Operated Valves (MOVs) 2-CS-16.1 A/B (Unit 2)

a. Inspection Scope

The team evaluated MOVs 2-CS-16.1A and 2-CS-16.1B for adequacy of design and their ability to perform as required during transient and accident conditions. The team interviewed operators and the valve system engineer to gain an understanding of the overall reliability of the valves. The team also performed a review of design changes, condition reports, calculations and test results associated with the valves.

b. Findings

No findings of significance were identified.

.2.1.3 Service Water Pump 2SW-P5C (Unit 2)

a. Inspection Scope

The team selected service water (SW) pump 2SW-P5C as a representative sample of the Unit 2 service water pumps. The team performed walkdowns of the service water and circulating water pumphouse areas, including the intake traveling screens that service both the circulating water and service water systems. The team also reviewed associated design documents, calculations, in-service testing procedures and results, vendor manuals, maintenance histories, and condition reports; and interviewed the system engineers and design engineers for these systems.

b. Findings

The team identified an issue regarding the operation of the service water pumps at a frequency below 60 Hz, which could occur when the pumps would be powered from the emergency diesel generators (EDGs).

At a given flow rate for a centrifugal pump, its developed head is proportional to its speed squared, which, for an AC induction motor drive, is directly proportional to its drive motor's power supply frequency. Technical Specification 4.8.1.1.2.a.3 specifies an allowable EDG frequency of 60 hertz, ±1.2 hertz (± 2%). Therefore, when operated from the EDGs at the minimum TS allowed frequency, the pump developed head could be as much as 4% below that when powered from the grid at 60 Hz, as they are during surveillance tests. Additionally, the team noted that the Millstone Unit 2 EDG governors are designed to control EDG speed (and therefore frequency) to within ± 0.25% of the speed setpoint.

The team questioned if this potential pump performance degradation should be accounted for when establishing pump test acceptance criteria. This adjustment had not been made in the service water pumps' design basis calculations, 92-120, "MP2 SWS Design Basis Alignments - Summer & Winter", Rev. 02 and 98-ENG-02697M2, "MP2 Service Water Pumps Acceptance Curve", Rev. 01, or surveillance test procedure, SP 2612B, "C Service Water Pump Tests", Rev. 010-01. However, the team verified that the actual service water pump performance was acceptable, by comparing the latest performance data for the worst performing pump, 2-SW-P5C, against the current acceptance criteria curve from calculation 98-ENG-02697M2, that the team adjusted upward by 4%.

Additionally, the team also found that calculation 92-120, from which the acceptance criteria curve in calculation 98-ENG-02696M2 was derived, included a 10% factor for "Model Uncertainties", which appeared to be a generic factor intended to be sufficiently large to encompass all uncertainties, including for test instrumentation. The team observed that if the actual instrumentation used for these tests had lower combined uncertainties than this generic factor, there could be sufficient margin in this factor to account for the frequency droop factor without changing current acceptance criteria.

The extent to which EDG operating frequency should be accounted for in design calculations is unresolved pending further NRC review (URI 05000336/2006010-01).

.2.1.4 Service Water Air Operated Valves 2-SW-3.2A/B (Unit 2)

a. Inspection Scope

The team selected service water air-operated valves 2-SW-3.2A/B as a representative sample of the various air-operated components in the facility that perform safety-related functions. These specific valves perform the safety function of isolating the service water supply to the turbine building closed cooling water (TBCCW) system heat exchangers for any event that involves safety injection (SI) actuation or the loss of normal power (LNP). This action is necessary to assure that all safety-related components served by service water have adequate flow to satisfy their design basis requirements. The team performed walkdown inspections of these valves, reviewed associated design documents, calculations, in-service testing criteria and results, vendor manuals, maintenance histories, and condition reports; and interviewed the system engineers and design engineers.

b. Findings

No findings of significance were identified.

.2.1.5 Reactor Building Closed Cooling Water (RBCCW) Pump 2RB-P11A (Unit 2)

a. Inspection Scope

The team selected the A RBCCW pump as a representative sample of the three Unit 2 RBCCW pumps. The team reviewed the system design basis flow and net positive suction head (NPSH) calculations associated with the pump operation under various transient and accident conditions. The team also reviewed recent pump test results, condition reports, maintenance history, and conducted a walkdown of the pump with the RBCCW system engineer. In addition, the team interviewed the RBCCW system engineer.

b. Findings

No findings of significance were identified.

.2.1.6 Containment Spray (CS) System Check Valve 2CS-26 (Unit 2)

a. Inspection Scope

The team selected the containment spray pump minimum flow check valve 2-CS-26 as representative of components whose failure posed very high risk for core damage. The failure of this valve to open had the 5th highest risk achievement worth of all PRA events. This valve is in the single common minimum flow return line to the refueling water storage tank (RWST) for the both divisions of the containment spray pumps, as well as for both divisions of the low pressure and high pressure safety injection (HPSI) pumps. Its safety function is to open to provide a flowpath back to the RWST when any of these pumps operate in a minimum flow mode, and thereby to prevent pump degradation or failure as a result of low or no flow. The team performed reviews of associated documents, including design drawings, vendor documents, calculations, a technical evaluation, condition reports, surveillance test procedures and results, and maintenance history documentation, and interviewed the system engineer and design engineer for this system.

b. Findings

The risk associated with the failure of this valve and a related procedure concern was identified by the licensee in 2004 and documented in condition report CR-04-06286. The CR recommended investigating the possibility of removing the valve's internals, thereby eliminating the risk, since no functional requirement, other than to open on demand, could be identified for this valve. The team noted that CR-04-06286 was subsequently closed without documenting a bases for not removing the internals. In

response to the teams questions, the licensee issued two new CRs. CR-06-05264 was initiated to address the improper closure of the original 2004 CR, and CR-06-05010 was initiated to again recommend evaluation of removing the valve's internals.

Notwithstanding, the licensee's position was that single failure of this valve was not required to be considered during the period where minimum flow capability might be required based on a statement in failure modes and effects analysis for the safety injection system. Specifically, FSAR Section 6.3.4.1 states that, "Failure of internals, including check and stop valves, is a passive failure. Passive failures are considered in the recirculation phase only, no earlier than 24 hours after an accident." Also, the licensee stated that the containment spray system did not need to be single failure proof because the containment fan coolers provide a redundant containment heat removal method. The licensee also pointed out that an open flowpath through this valve was demonstrated during the performance of quarterly pump surveillance tests required by technical specifications (TS), and that the valve was disassembled and inspected every 18 months in accordance with the inservice test (IST) program.

Because of the relatively high risk associated with the failure of this valve, this issue is unresolved pending additional NRC review, including an assessment of the licensee's evaluation of permanent removal of the valve internals (URI 05000336/2006010-02).

.2.1.7 Electrical Bus 24E (Unit 2)

a. Inspection Scope

The team selected Bus 24E as a representative sample of the Unit 2, 4.16 kV electrical buses. This is a swing bus that can be supplied from either emergency bus 24A or 24B and provides power to the alternate SW, RBCCW, and HPSI pumps. This bus also is also used to provide power to Unit 2 from the station blackout (SBO) diesel generator.

The team reviewed calculation MP2-ENG-ETAP-04014E2, which performed load flow and voltage studies, short circuit analysis and motor starting studies. The team also reviewed calculation 92-030-1311E2, Emergency Bus Undervoltage Setpoint Analysis, which calculates minimum allowable voltages to assure that the voltage exceeds the reset value of the degraded voltage relay. The team reviewed the operating procedure for the switchgear cooling system and walked down heat exchanger X-182, which provides cooling to the bus 24E switchgear room, to verify that any leaks in the cooling system would not impact the operation of the switchgear. The team also verified that measures could be taken to return service water to the cooler in the event of an inadvertent isolation caused by a moisture detector in the leak detection system.

The team also reviewed relay coordination curves for the various bus tie and feeder circuit breakers to ensure that proper coordination exists between bus 24E and all ties to the bus.

b. Findings

No findings of significance were identified

.2.1.8 Reserve Station Service Transformer (RSST) (Unit 2)

a. Inspection Scope

The Unit 2 RSST is a three winding transformer with a high voltage winding at 345 kV and low voltage windings rated at 6.9 kV and 4.16 kV. The 4.16 kV winding supplies the emergency buses and the 6.9 kV winding supplies balance of plant large loads.

The team reviewed MP2-ENG-ETAP-04014, Attachment AH, that provides a summary of the loads on the transformer. The team reviewed the protective relaying for the transformer, including the differential relaying and over current relaying on the 345 kV winding, and phase and ground over current on the secondary sides. The team also reviewed preventive maintenance work orders including those associated with oil sampling analysis. Condition reports associated with the RSST were also reviewed to ensure the issues had been appropriately addressed.

b. Findings

No findings of significance were identified

.2.1.9 125 Vdc Bus 201B and Battery DB2-201B (Unit 2)

a. Inspection Scope

The team selected the Unit 2 125 volt direct current (Vdc) Bus 201B and “B” Battery as a representative sample of the Unit 2 DC system. The team conducted a walkdown of the battery and switchgear rooms, and a review of calculations and changes, testing criteria and results, vendor manuals, maintenance history, work packages and condition reports. The team interviewed system engineers, design engineers and operations personnel to assess the licensee’s evaluation and corrective actions for recent margin and performance issues and to assess the overall reliability of the DC system.

b. Findings

A licensee identified violation associated with the battery is documented in Section 4OA7 of this report.

.2.1.10 Emergency Diesel Generator (EDG) 15G-12U (Unit 2)

a. Inspection Scope

The team reviewed calculation PA-79-126-1027-E2, MP2 Emergency Diesel Generator (EDG) Loading Calculation, to determine the maximum load on the Unit 2 EDGs. The team assessed the adequacy of the designs for the EDG output breaker and support

systems by reviewing the logic and the schematic diagrams for the output breaker (A312) as well as piping and instrumentation drawings (P&IDs) for various support systems including fuel oil, lubrication oil, starting air, jacket water cooling. The team also reviewed SPROC ENG00-S-01, Millstone 4.16 kV Cross Tie Test, and verified the elapsed time to perform the test was within the design assumptions.

b. Findings

No findings of significance were identified.

.2.1.11 Pressurizer Pressure Transmitters PT-102A/B/C/D (Unit 2)

a. Inspection Scope

The team selected the pressurizer pressure transmitters PT-102A/B/C & D as a representative sample of Unit 2 instrumentation systems with inputs to the reactor protection system. The team conducted a walkdown of the instrumentation switchgear, control room panels and indications, and reviewed circuit and functional logic diagrams, testing criteria and results, work packages and condition reports. The team interviewed system engineers, design engineers and operations personnel to gain an understanding of performance issues and the overall reliability of pressurizer pressure transmitters.

b. Findings

No findings of significance were identified

.2.1.12 Service Water Strainers 3SWP*STR1A/B/C/D (Unit 3)

a. Inspection Scope

The team selected service water strainers 3SWP*STR1A/B/C/D for review. These safety-related components are located immediately downstream of the service water pumps and provide filtration of particulate from the service water flow streams prior to their distribution to various safety-related and non-safety-related heat exchangers. The strainers were selected, in part, to allow an assessment of the licensee's resolution of a history of significant design, maintenance, and manufacturing quality control issues. The team performed walkdowns of the strainers, reviewed test procedures, design documents, maintenance work orders, condition reports, and vendor documents, and conducted interviews with the system engineer.

The team also reviewed corrective actions taken and planned to improve the reliability of the intake structure cathodic protection system, which is designed to prevent corrosion in the intake structure components and structures, including the safety-related service water system components.

The team reviewed several aspects of the flooding protection of the service water pump house for the design basis flood. The assessment included walkdowns, interviews with the associated system engineers, and reviews of design, inspection, and operating procedures, condition reports, and calculations.

b. Findings

No findings of significance were identified.

.2.1.13 Traveling Screen 3SWT*SSC1A (Unit 3)

a. Inspection Scope

The team reviewed traveling water screen 3SWR-SSC1A as an example of equipment that, though classified as non-safety, had the potential in case of its failure to cause the cascading failure of critical safety-related equipment. The failure of the traveling screen to perform its design function, removing medium-sized mechanical contaminates from the circulating and service water flow stream from the ultimate heat sink, Long Island Sound, could have the potential to overwhelm the associated service water strainer, thereby preventing the associated service water system division from providing the required cooling water flow to both its safety-related and its non-safety-related heat exchangers. Structural failure of a traveling screen would have the potential to not only negate its design function, but also impact the structural and therefore functional integrity of the associated service water pump. The team's review included walkdowns, review of vendor documents, design documents, condition reports, and maintenance work history documents and interviews with the system engineer. The review was also extended to the supporting non-safety-related screen wash and instrument air systems, whose functions were necessary for the proper operation of the traveling screens.

b. Findings

No findings of significance were identified.

.2.1.14 Motor Driven Auxiliary Feedwater Pump 3FWA*P1A (Unit 3)

a. Inspection Scope

The team selected the motor driven auxiliary feedwater (AFW) pump P1A (MDAFP) as a representative sample of a Unit 3 AFW system component. The team conducted a walkdown of the pump, and reviewed permanent modifications, in-service testing criteria and results, vendor manuals, maintenance history, temporary design changes and condition reports. The team interviewed system engineers, IST engineers, predictive maintenance engineers, and operations personnel to assess the licensee's resolution of recent maintenance issues and the overall reliability of the pump.

b. Findings

No findings of significance were identified.

.2.1.15 Main Steam Isolation Valve (MSIV) 3MSS*CTV27A (Unit 3)

a. Inspection Scope

The team selected the A MSIV and its associated isolation logic as a representative sample of MSIVs installed in Unit 3. The team interviewed the valve system engineer and performed a review of design changes, engineering evaluations, condition reports, calculations, and test results associated with the valve.

b. Findings

No findings of significance were identified.

.2.1.16 Charging Pump 3CHS*P3B (Unit 3)

a. Inspection Scope

The team selected charging pump P3B as a representative sample a Unit 3 chemical and volume control system (CVCS) component. The team conducted a walkdown of the pump, and a review of work orders, calculations, in-service testing criteria and results, vendor manuals, maintenance history, design changes and condition reports. The team interviewed system engineers, IST engineers, predictive maintenance engineers and operations personnel to gain an understanding of recent maintenance issues and the overall reliability of the pump. The team focused on the January 24, 2006, event when the P3B charging pump shaft sheared during a surveillance test run. The team also reviewed the root cause evaluation (M-06-00724) and interviewed personnel involved in its development.

b. Findings

No findings of significance were identified.

.2.1.17 Station Blackout (SBO) Diesel Generator 3BGS-BG-A (Unit 3)

a. Inspection Scope

The team reviewed the capability of the SBO diesel generator to provide an alternate AC power source to Unit 2 or Unit 3. The team reviewed calculation PA-090-050-00308E3, Station Blackout Diesel Generator Loading, to verify that the SBO generator's capacity was sufficient to provide power to either unit during a station blackout event and to supply power for safe shutdown following a fire. The team also reviewed calculation 90-050-00097E3, SBO Diesel Generator Power Cable, to assure that the power to Unit 2 would not be limited by the cable which was installed by plant modification DCR M3-99039. The cable sizing review included assuring that the cable was adequate to

withstand a short circuit condition without exceeding its temperature limit. The team also reviewed the SBO diesel support system designs, including the lube oil system, engine cooling system, fuel oil system, air start system, air intake and exhaust, and the enclosure air conditioning, ventilation and heating. The team also reviewed the adequacy of the on-site fuel oil storage capabilities.

The team reviewed several condition reports associated with the SBO diesel to assess the adequacy of the licensee's resolution of the issues. The team also reviewed actions taken by the licensee as a result of NRC Information Notice 97-21, Availability of AC Power Source Designed for Station Blackout Event.

b. Findings

No findings of significance were identified.

.2.1.18 Inverter 3VBA*INV-1 (Unit 3)

a. Inspection Scope

The team selected the Unit 3 DC/AC inverters and battery chargers. The team conducted a walkdown of the battery and switchgear rooms, and a review of calculations and changes, testing criteria and results, vendor manuals, maintenance history, work packages and condition reports. The team interviewed system engineers, design engineers and operations personnel to gain an understanding of recent margin and performance issues and the overall reliability of inverters and battery charger systems.

b. Findings

No findings of significance were identified.

.2.1.19 Emergency Diesel Generator 3EGS*EG-A (Unit 3)

a. Inspection Scope

The team selected the A EDG. The team conducted a walkdown of the EDG spaces and support systems, and conducted interviews with system engineers, design engineers and operations personnel. The team reviewed EDG loading calculations and changes, testing criteria and results, electrical diagrams, work packages and condition reports, as well as surveillance and maintenance history.

b. Findings

No findings of significance were identified.

.2.1.20 DC Panel/3BYS*PNL-301A-1 /Battery 3BYS*BAT-1 (Unit 3)

a. Inspection Scope

The team selected the DC panel 301A/B and Batteries 301A-1/301B-1 as a representative sample of the Unit 3 DC electrical system. The team conducted a walkdown of the battery and switchgear rooms, and a review of calculations and changes, testing criteria and results, vendor manuals, maintenance history, work packages and condition reports. The team interviewed system engineers, design engineers and operations personnel to gain an understanding of recent margin and performance issues and the overall reliability of DC electrical system.

b. Findings

No findings of significance were identified.

.2.1.21 Electrical Bus 34C (Unit 3)

a. Inspection Scope

The team selected bus 34C as a representative sample of the Unit 3 AC power distribution system 4.16 kV buses. Bus 34C is normally supplied from the reserve station service transformer and can also be powered by EDG A when the normal source of power is unavailable. Bus 34C supplies 480 volt emergency buses 32U, 32V, 32W and 32X and several large pump motors.

The team reviewed the electrical distribution analysis that was performed using ETAP Power Station software and documented in calculation MP3-ENG-ETAP-04125E3. The calculation analyzed various plant configurations such as RSST feed, and normal station service transformer (NSST) feed and loading conditions for both operating and shutdown modes. The review included the assumptions, inputs and results of the load flow and voltage profile study, short circuit analyses, motor starting analyses, and the SBO DG voltage profile. The team also reviewed engineering evaluations for conditions not meeting the acceptance criteria in the calculation. The team reviewed calculation NL-042 which established the degraded voltage protection scheme relay settings and verified that the steady state voltages in the system analyses remained above the value of the minimum reset value for all buses.

The team reviewed the relay coordination curves and settings for bus 34C supply and tie breakers. Schematic diagrams for the breaker feeding the bus from the RSST and for the tie breaker to bus 34A were reviewed to verify the adequacy of the design. The team also reviewed the circuit breaker maintenance program and implementing procedures as well as selected surveillance procedures, including those for the bus undervoltage channel calibration. The team also verified the licensee had a program for monitoring circuit breaker performance to ensure the breaker operation is not adversely impacted by hardened lubricants.

b. Findings

No findings of significance were identified.

.2.1.22 Diesel Sequencer 3RPS*PNLESCAm (Unit 3)

a. Inspection Scope

The team selected the Unit 3 emergency diesel generator sequencers. The team conducted a walkdown of the EDG's and associated control panels. The team reviewed EDG loading calculations and changes, sequencer testing criteria and results, logic and electrical diagrams, work packages and condition reports. The team interviewed system engineers, design engineers and operations personnel to review the design adequacy of the sequencer system.

b. Findings

No findings of significance were identified.

.2.2 Review of Low Margin Operator Actions

The team assessed manual operator actions and selected a sample of six operator actions for detailed review based upon risk significance, time urgency, and factors affecting the likelihood of human error. The operator actions were selected from a PRA ranking of operator action importance based on RAW and RRW values. The non-PRA considerations in the selection process included the following factors:

- Margin between the time needed to complete the actions and the time available prior to adverse reactor consequences
- Complexity of the actions
- Reliability and/or redundancy of components associated with the actions
- Extent of actions to be performed outside of the control room
- Procedural guidance
- Training

.2.2.1 Align To Unit 3 Station Blackout (SBO) Diesel for AC Power (Unit 2)

a. Inspection Scope

The team selected the operator actions to align the Unit 2 electrical distribution system to receive AC power from the Unit 3 SBO diesel for review. Unit 3 has an SBO diesel generator which can supply AC power under loss of all AC power conditions (i.e., station blackout), and Unit 2 has the capability to align to Unit 3 busses to receive AC power from the Unit 3 SBO diesel generator. These operator actions would be performed under the emergency operating procedures (EOPs). The failure of these actions could result in continued loss of all AC power, and without subsequent recovery of offsite power, could result in core damage.

The team reviewed EOPs which specify the control room operator actions to align the Unit 2 electrical busses, and observed a demonstration of these actions in the simulator under SBO conditions. The team interviewed licensed operators and trainers regarding the difficulty of associated actions, the training provided on these actions, and the knowledge level necessary for successful completion. Also, the team walked down the applicable electrical equipment in the field. The team evaluated the capability to perform these actions from outside the control room. The team reviewed human error analyses and evaluations related to the time available prior to adverse consequences.

b. Findings

No findings of significance were identified.

.2.2.2 Provide Alternate Cooling to 125 Vdc Switchgear Rooms (Unit 2)

a. Inspection Scope

The team selected the manual personnel actions to provide alternate cooling to the east and/or west 125 Vdc switchgear rooms for review. These actions would be performed following loss of ventilation to these rooms, including loss-of-offsite power and station blackout, to prevent the malfunction of the DC breakers and controls located in these rooms. Malfunctions of the DC electrical equipment would adversely affect numerous other safety-related systems. The alternate cooling actions involve opening applicable doors and installing temporary fans for loss of ventilation, and involve opening doors for loss of power conditions.

The team evaluated procedural guidance for providing alternate cooling under loss of AC power conditions (i.e., emergency operating procedures) and loss of ventilation conditions (i.e., operating procedures), and interviewed licensed operators and trainers regarding the difficulty of associated actions, the training provided on these actions, and the knowledge level necessary for successful completion. The personnel noted that the loss of ventilation aspects are periodically implemented as part of routine maintenance. The team inspected the switchgear rooms and temporary ventilation fans stored in the vicinity, and walked through the procedures with an operator to evaluate factors potentially affecting successful completion. The team reviewed human error analyses and room heatup calculations to evaluate the time available prior to adverse consequences.

Findings

No findings of significance were identified.

.2.2.3 Manually Initiate Turbine-Driven AFW Pump (Unit 2)

a. Inspection Scope

The team selected the manual operator actions to initiate the turbine-driven AFW pump, both manually in the control room or locally in the turbine AFW pump room, for review.

These actions would be performed under the EOPs following reactor events in which the feedwater system and motor-driven AFW pumps were insufficient to provide cooling water to the steam generators (SGs). Failure to provide SG cooling water could lead to loss of core cooling. There is no automatic actuation of the turbine AFW pump. The local actions would be performed under the EOPs if DC power was lost.

The team reviewed EOPs which specify the control room and local operator actions to initiate the turbine AFW pump. The team observed a demonstration of these actions in the simulator under post-trip conditions, and interviewed licensed operators and trainers regarding the difficulty of associated actions, the training provided on these actions, and the knowledge level necessary for successful completion. Also, the team walked down the applicable equipment in the field and walked through the procedural steps with a licensed operator. The equipment operators have been trained on the steps to be performed locally to start the pump, and the team reviewed the job performance measure (JPM) used to periodically evaluate the equipment operators' knowledge. The team evaluated the factors, including exhaust ventilation, which would affect the operators' ability to perform the actions in the turbine AFW pump room. The team evaluated the capability to perform these actions from the remote shutdown panels. The team reviewed human error analyses and evaluations related to the time available prior to adverse consequences.

b. Findings

No findings of significance were identified.

.2.2.4 Once-Through-Cooling of the Reactor (Unit 2)

a. Inspection Scope

The team selected the operator actions to initiate once-through-cooling of the reactor for review. These actions would be performed by the reactor operators under the EOPs when core cooling via the SGs is no longer effective, and involve initiating/confirming safety injection and opening the power operated relief valves (PORVs), i.e., a direct feed path and a direct bleed path.

The team reviewed EOPs which specify the control room operator actions to initiate once-through-cooling. The team interviewed licensed operators and trainers regarding the difficulty of associated actions, the training provided on these actions, and the knowledge level necessary for successful completion. The team observed a demonstration of these actions in the simulator under post-trip conditions. Also, the team evaluated the capability to perform these actions from the remote shutdown panels. The team reviewed human error analyses and evaluations related to the time available prior to adverse consequences

b. Findings

No findings of significance were identified.

.2.2.5 Establish Feed and Bleed Cooling of the Reactor (Unit 3)

a. Inspection Scope

The team selected the operator actions to initiate feed and bleed cooling of the reactor for review. These actions would be performed by the reactor operators under the EOPs when core cooling via the SGs is no longer effective, and involve initiating/confirming safety injection and opening the PORVs, i.e., a direct feed path and a direct bleed path.

The team reviewed EOPs which specify the control room operator actions to initiate feed and bleed cooling and the associated basis documents. The team interviewed licensed operators and trainers regarding the difficulty of associated actions, the training provided on these actions, and the knowledge level necessary for successful completion. The team observed a demonstration of these actions in the simulator under post-trip conditions. Also, the team evaluated the capability to perform these actions from the remote shutdown panels. The team reviewed human error analyses and evaluations related to the time available prior to adverse consequences.

b. Findings

No findings of significance were identified.

.2.2.6 Start and Align the Station Blackout Diesel Generator (Unit 3)

a. Inspection Scope

The team selected the operator actions to start and align the SBO diesel generator for review. Unit 3 has an SBO diesel generator which can supply AC power during a station blackout. These operator actions would be performed under the EOPs. The failure of these actions could result in continued loss of all AC power, and without subsequent recovery of offsite power, could result in core damage.

The team reviewed EOPs which specify the control room licensed operator and local equipment operator actions to start the SBO diesel generator and align its output to vital electrical busses, and observed a demonstration of these actions in the simulator under SBO conditions. Also, the team walked through the applicable actions at the SBO diesel with the system engineer, a licensed operator, and an equipment operator, and walked through the procedural steps at the applicable breakers in the field with a licensed operator. The team interviewed licensed operators and trainers regarding the difficulty of associated actions, the training provided on these actions, and the knowledge level necessary for successful completion. Further, equipment operators have been trained on the steps to be performed locally to start the SBO diesel generator, and the team reviewed the JPM used to periodically evaluate the equipment operators' knowledge. The team evaluated the capability to perform these actions from outside the control room. The team reviewed human error analyses and evaluations related to the time available prior to adverse consequences.

b. Findings

No findings of significance were identified.

.3 Review of Industry Operating Experience (OE) and Generic Issues

a. Inspection Scope

The team reviewed selected operating experience issues that had occurred at domestic and foreign nuclear facilities for applicability at Millstone Units 2 and 3. The team performed an independent applicability review and selected issues apparent applicable to Millstone for a detailed review to verify that the licensee had taken appropriate actions. The team performed a detailed review of the following OE issues.

.3.1 NRC Information Notice (IN) 92-64, Nozzle Ring Settings on Low Pressure Water-Relief Valves (Unit 2)

The team reviewed the licensee's assessment of the potential of improper maintenance to adversely affect low pressure water relief valves. The team reviewed associated maintenance procedures and the failure history of valves that were susceptible to the problem. A sample of condition reports associated with relief valve issues were also reviewed to verify that the problems identified in the IN had not occurred.

.3.2 NRC Bulletin 88-04, Pump Minimum Flow Cooling (Unit 2)

The team reviewed the potential loss of safety-related pumps due to two conditions: dead-heading of a weaker pump through a common minimum flow line and inadequate minimum flow capacity for single pump operation. The areas reviewed included procedural changes and internal memos written to limit the safety-related pump operation on minimum flow to less than 30 minutes.

.3.3 NRC Information Notice (IN) 96-45, Potential Common Mode Post-Accident Failure of Containment Coolers (Unit 2 & 3)

The team reviewed the potential for post-accident water hammer to cause failure of the containment coolers, including their piping and supports. This concern was also addressed in Generic Letter 96-06. The licensee evaluated both units for this concern and found that the potential for such failures existed in Unit 2, but that it did not exist in Unit 3, because the containment fan coolers were not used for post-accident containment pressure control in Unit 3. Licensee Event Report 97-015-00 addressed Unit 2 corrective actions, which included RBCCW (cooling source) system design modifications and procedure revisions. The team reviewed licensee correspondence on the subject, a related Nuclear Safety Engineering Report, Condition Report M2-96-0146, RBCCW design drawings, and five related calculations, and discussed corrective actions with the responsible design engineer. Although the LERs were observed to have addressed the RBCCW piping and supports only and not addressed the water hammer effects on the cooler units themselves, the team's review of the calculations

verified that the containment coolers had been adequately analyzed and shown to be capable of withstanding the water hammer loads and stresses.

.3.4 NRC Information Notice (IN) 94-76, Failure of Charging/Safety Injection Pump Shafts (Unit 3)

The team reviewed the potential failures of centrifugal pumps used in charging and safety injection pump applications. The team reviewed the Millstone Unit 3 pump performance history and discussed the issue with system and design engineers. The method and frequency of vibration monitoring were also reviewed, as well as the most recent vibration data for the charging pump.

.3.5 NRC Generic Letter (GL) 96-05, Periodic Verification of Design Basis Capability of Safety-Related Motor-Operated Valves (Unit 3)

The team reviewed the testing of MOVs to address degradation that could result in (1) the increase in thrust or torque requirements to operate the valves and (2) the decrease in the output capability of the motor actuator. The team reviewed the licensee's response to the generic letter and technical evaluations related to the issue. The team also interviewed the MOV program owner.

.3.6 NRC Information Notice (IN) 93-95, Storm-Related Loss of Offsite Power Events Due to Salt Buildup on Switchyard Insulators (Unit 3)

The team reviewed the licensee's actions to address salt buildup on switchyard insulators. The licensee has applied a coating (Sylgard) to switchyard insulators at Millstone. The team reviewed CR M3-97-3073 addressing coating degradations and CR-04-10718 addressing periodic replacement of the insulators.

.3.7 NRC Information Notice (IN) 94-24, Inadequate Maintenance of Uninterruptible Power Supplies and Inverters (Unit 3)

The team reviewed the potential for inadequate maintenance of uninterruptible power supplies (UPS) and inverters. The team reviewed the licensee's evaluation of the IN, corrective actions implemented as a result of the evaluation, and maintenance and tests performed on the UPS and inverters.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (PI&R)

a. Inspection Scope

The team reviewed a sample of problems that were identified by the licensee and entered into the corrective action program. The team reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to design or qualification issues. In addition, condition reports written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action system. The specific corrective action documents that were sampled and reviewed by the team are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

4AO6 Meetings, Including Exit

Exit Meeting Summary

On June 16, 2006, the team presented the inspection results to Mr. A. Jordan, Director - Operations and Maintenance, and other members of the Dominion staff. The team verified that no proprietary information is documented in the report.

4AO7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

Cornerstone: Mitigating Systems

Criteria V, “Instructions, Procedures and Drawings,” of 10 CFR Part 50, Appendix B, 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. Contrary to this requirement, plant personnel replaced 40 watt bulbs in the Unit 2 125 Vdc lighting system with 300 watt bulbs which was not consistent with system drawing specifications. The higher wattage bulbs resulted in a significantly higher load on the safety-related batteries. Upon identification of the issue, the licensee confirmed the affected lighting was not credited for use during a fire safe shutdown event and then de-energized the circuits to prevent an adverse impact on the battery. A root cause evaluation was being performed to determine if any additional corrective actions were warranted. This issue was determined to be more than minor because it affected the configuration control attribute of the mitigating system cornerstone objective to ensure

the availability, reliability and capability of systems that respond to initiating events. The inspectors determined the finding was of very low safety significance because preliminary licensee evaluations determined that the additional load on the battery would not have prevented the system from supplying sufficient voltage to the most limiting load on the systems during accident conditions. The licensee has entered this issue into the corrective action program (CR-06-05202).

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

A. Chyra	Probabilistic Risk Assessment
J. Armstrong	Fire Protection Engineer
D. Aube	Supervisor - Electrical/I&C Systems and Standards
P. Bandaru	Design Engineer
W. Bellows	Inservice Testing Engineer
K. Cyr	Electrical System Lead Engineer
K. Deslandes	Supervisor - Electrical & I&C Engineering
G. Filippides	I&C Lead Engineer
G. Gardener	Design Engineer
T. Kinney	Maintenance Supervisor
N. Kuzel	Inspection Response Coordinator
P. L'Heureux	Supervisor - Mechanical Systems and Standards Group
M. Legg	Design Engineer
M. Marino	Design Engineer
A. Nicotera	Predictive Maintenance Engineer
N. Nowland	Inspection Response Coordinator
G. Olson	Shift Manager
R. Patel	Design Engineer
D. Smith	Engineering Manager
H. Thompson	System Engineer
R. Vanstreenberger	MOV Program Engineer
K. Wallace	Design Engineer
R. Wells	Design Engineer
J. Young	Shift Technical Advisor

NRC Personnel

W. Schmidt, Senior Reactor Analyst
S. Schneider, Senior Resident Inspector
S. Kennedy, Resident Inspector
J. Benjamin, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

050336/2006010-1	URI	NRC to review consideration of EDG frequency affects on design bases calculations.
050336/2006010-2	URI	NRC to review licensee evaluation of removal of check valve CS-26 internals.

Opened and Closed

None

Closed

None

LIST OF DOCUMENTS REVIEWED

Calculations/Engineering Analyses

98-ENG-02621-M2, Determination of the Instrument Air Requirement for Certain Safety Related Valves, Rev. 3
92-120, MP2-SWS Design Basis Alignments - Summer & Winter, Rev. 2
96-018, Conversion of MP2 Service Water System DOS-Based Thermal Hydraulic Model to PROTO-FLOW, Rev. 0
03104-C-001, Evaluation of Condensation-Induced Waterhammer in RBCCW System, 05/22/03
HI-971847, GL 96-06 RBCCW System Fluid Transient Analysis, 01/16/98
HI-981906, Pressure Response in RBCCW System Following Late Pump Startup, 03/31/98
HI-981951, Potential for Flashing in Millstone Unit 2 RBCCW System During Post Accident Operation, 01/13/99
HI-982020, RBCCW System Fluid Analysis for Delayed Pump Start, 12/28/98
01-ENG-01884M3, MP3 Service Water Cubicle Internal Flooding Evaluation, Rev. 0
PA-79-126-1027E2, Millstone Unit 2 EDG Loading, Rev. 2
PA-91-019-0556E3, RSST, NSST & SBO Power Cables In Duct Banks, Rev. 1
PA-90-050-077E3, SBO EDG Power Cable Sizing, Rev. 0
92-030-1311E2, Emergency Bus UV Setpoint Analysis, Rev. 1
NL-026, Electrical Load on NSST & RSST, Rev. 3
NL-040, UV Protective Relay System Relay Settings for Unit 3, Rev. 1
NL-042, Degraded Voltage Protective System Relay Settings, Rev. 3
MP2-ENG-ETAP 04014E2, Electrical Distribution System Analysis, Rev. 0
MP3-ENG-ETAP 04125E3, Electrical Distribution System Analysis, Rev. 0
90-050-0410E3, Voltage Profile and Short Circuit Analysis for SBO EDG, Rev. 0
SWEC 178E, 5 KV & 8 KV Power Cable Temperature Under Fault Conditions, Rev. 2
PA-90-050-0308E3, SBO EDG Loading, Rev. 3
98-ENG-02132E2, MP2 Appendix R Load Calculation, Rev. 1

SBO Bat-1208E3, SBO Battery Sizing, Rev. 0
M3-EV-99-0114, Technical Evaluation for Unit 3 Control Building HVAC Heat Removal
S-01759-S3, Emergency Switchgear Room Loss of Ventilation Analysis for Maintenance Rule, Rev. 0
89-078-873ES, Millstone Unit 2 Target Thrust/Torque Calculation for 2-CS-16.1A, 2-CS-16.1B, Rev. 2
89-078-890ES, Millstone Unit 2 MOV System and Functional Design Basis Review, Rev. 4
PA-89-078 -272E2, MP2 MOV Voltage Drop Calculation, Rev. 0
89-078-01687M2, Millstone Unit 2 Required Stem Thrust Calculation for MOV 2-CS-16.1A and 2-CS-16.1B Using EPRI PPM Methodology, Rev. 0
89-078-1192M2, Millstone Unit 2 Pressure Locking and Thermal Binding Evaluation of Gate Valves, Rev. 0
98PL-02611-D-2, Valve 2-CS-16.1A/B Pressure Locking Modification and Air Space Sizing, Rev. 0
97-ENG-01840E2, MP2 Thermal Overload Relays for MOVs on Safety Related MCCs, Rev. 1
94102-C-03, Weak Link Seismic Assessment MOV 2-CS-16.1A/B, Rev. 5
97-169, MP2 RBCCW Design Basis Flow Distribution, Rev. 3
1219-NP(B)-269-FB, Main Steam System Turbine Trip Stop Valve Closure (MSV 1,2,3,4), Rev. 0
89-094-02902M2, Millstone Unit 2 MOV Diagnostic Test Matrix, Rev. 3
96-ENG-1409M2, East DC Switchgear Room Loss of Cooling System F-54A, Rev. 2
96-ENG-1410M2, West DC Switchgear Room Loss of Cooling System F-54B, Rev. 1
97-ENG-01774-E2, Battery Sizing Calculation, Rev. 2
K43-EV-99-0114, Actual MP3 Control Building HVAC Heat Removal Requirements
NL-033, Millstone 3 Emergency Generator Loading and Starting KVA Calculation

Design Documents

M3-99039, 4.16 KV Cross Tie MP2-MP3, Rev. C
DM2-00-0283-04, 4.16 & 6.9 KV Circuit Breaker Closing Circuit Modification
DM3-00-0657, SBO UPS Battery Replacement
DCR M2-97037, Valves 2-CS-16.1 A & B Pressure Locking Modifications, Rev. 1
DCN DM3-S-1047-94, MSIV (3MSS*CTV 27A, B, C, & D) Control Block Manifold Replacement
DCN DM3-01-0096-01, MSIV 3MSS*CTV27B and 3MSS*CTV27D Gasket Replacement, 05/09/01
DCN DM3-00-1121-98, Train “B” MSIV Solenoid Replacement, 12/13/98
DCN DM3-00-1119-98, MSIV Solenoid Valve Replacement, 12/11/98
DCN DM2-01-0230-02, RBCCW Pumps Cartridge Seals, 07/29/04
DCN DM2-00-1032-97, RBCCW Minimum Flow Recirculation Line - Orifice Replacement, 09/22/97

Drawings

25212-26904, Sht. 1, Chemical & Volume Control
25212-26905, Sht. 1, Charging Pump Sealing and Lubrication
25203-26005, Sht. 3, Condensate Storage and Aux. Feed
25203-26002, Sht. 1, Main Steam From Generators
25203-26015, Sht. 2, High Pressure Safety Injection Pumps

25212-26930, Sht. 2, Feedwater System
25212-26923, Sht. 1, Main Steam and Reheat
25212-26913, Sht. 2, High Pressure Safety Injection
991745, Sht. 1, Ingersoll-Dresser Pump Company HMTA Pump
500-849739, Pacific Pumps Division RL-lJ Charging Pump Drawing, Rev. 7
25203-20150, Sht. 698, Containment Spray Test Hdr. To RWST HCD©), Rev. 8
25203-20071, Area 9, Piping Plan El. 14'-6", Sht. No. 2, 01/20/76
D-72-253, Refueling Water Storage Tank For Bechtel Corporation, Rev. 10
D-72-267, Details - Refueling Water Storage Tank For Bechtel Corporation, Rev. 8
25203-26008, Sht. 2, Service Water, Rev. 84
25203-26009, Sht. 7, Instrument Air System, Rev.14
25203-26022, Sht. 1, RBCCW System, Rev. 44
25203-26022, Sht. 2, RBCCW System, Rev. 25
25203-26022, Sht. 3, RBCCW System, Rev. 14
25203-26022, Sht. 4, RBCCW System, Rev. 23
25203-26022, Sht. 5, RBCCW System, Rev. 25
25203-26022, Sht. 6, RBCCW System, Rev. 15
25212-27126, Sht. 1, Machinery Locations, Circulating & Service Water Pumphouse, Rev. 12
25212-27128, Sht. 3, Machinery Locations, Circulating & Service Water Pumphouse, Rev. 10
25212-24277, Sht. CW007A, Penetration Floor Mapwest , Intake Structure El. 14'-6", Service Water Pump Cubicle - West Room, Rev. 1
25212-24277, Sht. CW007B, Fire Stops & Seals Drawing, Intake Structure, Rev. 2
25212-24277, Sht. CW007C , Fire Stops & Seals Drawing, Rev. 2
25212-24277, Sht. CW007D, Fire Stops & Seals Drawing, Rev. 1
25212-24277, Sht. CW008A, Penetration Floor Mapwest , Intake Structure El. 14'-6" Service Water Pump Cubicle - East Room, Rev. 1
25212-24277, Sht. CW008B, Fire Stops & Seals Drawing, Intake Structure, Rev. 1
25212-24277, Sht. CW008C, Fire Stops & Seals Drawing, Rev. 1
25212-24277, Sht. CW008D, Fire Stops & Seals Drawing, Rev. 1
25212-24036, Fire Stops & Seals Map Locations, Rev. 3
25212-29680, Sht. 7, Penetration Seals for Conduits, Sleeves, Cast, or Core Bored Openings Up To 5" Dia., Rev. 9
25212-29680, Sht. 8, Radiation, Air, Water and/or Fire Seal for Electrical Blockout Openings, Rev. 7
25212-29680, Sht. 9, Hydrostatic (Water) Seal for Electrical Ducts, Sleeves, or Conduits, Rev. 7
25212-29680, Sht. 10, High Density Silicone Elastomer Fire, Air, and/or Radiation Seal for Electrical Blockout Openings, Rev. 7
25212-59079, Sht. 12, Water Screen Control Panel Schematic Diagram-Diff. Control 3SWT-PNLTSA, B, C, D, E, & F, Rev. V
25212-59079, Sht. 15, Six-Model 45A Water Screens Arrg't of Control Panels, Rev. G
25212-32001, Sht. 58D, RSST Breaker Control Circuit, Rev. 26
25203-32002, Sht. 1, Unit 2 Main Feeder Breaker Control Circuit 22S3-24C-2 (302), Rev. 9
25203-32002, Sht. 11, 4.16 kV Tie Feeder Breaker 24C-IT-2 (A304), Rev. 8
25203-30001, Unit 2 Main Single Line Diagram, Rev. 23
25203-30009, Unit 2 Main Single Line Meter and Relaying Diagram Bus 24E, Rev. 9
25212-30001, Unit 3 Main Single Line and Phasing Diagram, Rev. 22
25212-30018, Sht. 1, Bus 34C One Line Diagram 3ENS*SWG-A (-O), Rev. 34
25212-30019, Sht. 2, Bus 34C One Line Diagram 3ENS*SWG-A (-O), Rev. 14

12179-EE-1Z, Bus 34A&B &AAC Diesel Generator One Line Diagram, Rev. 12
12179-ESK-5BB, Elementary Diagram 4.16 KV NSST Circuit Breaker, Rev. 21
12179-ESK-5BD, Elementary Diagram 4.16 KV RSST Circuit Breaker, Rev. 26
12179-ESK-5BF, Elementary Diagram 4.16 Kv Bus Tie Circuit Breaker, Rev. 21
12179-EM-158A, SBO EDG Lube Oil, Rev. 9
12179-EM-158B, SBO EDG Diesel Cooling, Rev. 6
12179-EM-158C, SBO EDG Fuel Oil, Rev. 9
12179-EM- 158D, SBO EDG Air Starting, Rev. 9
12179-EM- 158E, SBO EDG Air Intake and Exhaust, Rev. 4
25203-MP2-SFR, Figure 2.5-1, Safety Injection System, Rev. 6
25212-29177, Sh. 101, Main Steam Isolation Valves Manifold Gaskets, 02/21/95
25212-MP3-SFR, Figure 2.4-1, Main Steam System, Rev. 5
25212-28723, Sht. 1-24, Logic Diagram – Emergency Load Sequencer Timing
25203-28150, Sht. 1, 2A, 2B, 5A, 5B, Engineered Safety Logic
25203-28115, Logic Diagram – CTMT Sump Recirc. Valves
25203-30024, Single Line Diagram – 125VDC Emerg. & 120VAC Vital Sys
25203-30107, Sht. 1 & 2, 125V CD Load Center Circuit Breaker Settings
25203-30022, (DV10) 125 VDC & 120 VAC Distribution Panel Schedule, Sht. 10C, 10LA, 10P, 11J, 11JA, 12C, 12Q, 12QA, 12T, 13M
25203-35038, Sht. 56, Auxiliary Bldg. EL.14'-6" Lighting Panel Schedule Panel DO11
25203-35038, Sht. 60, Auxiliary Bldg. EL.14'-6" Lighting Panel Schedule Panel DO21
25203-35011, Lighting, Grounding & Comm. Plan, Aux. Bldg & Contain EL. (-) 45' -6"
25203-35012, Lighting, Grounding & Comm. Plan, Aux. Bldg & Contain EL. (-) 55' -6"
25203-35013, Lighting, Grounding & Comm. Plan, Aux. Bldg & Contain EL. (-) 5' -0"
25203-35014, Lighting, Grounding & Comm. Plan, Aux. Bldg 14'-6" Cable Vault 25'-6"
25203-35019, Lighting, Grounding & Comm, Aux. Bldg at EL. 36' -6"
25203-28500, Sht. 53A&B, PT-102A Pressurizer Loop Diagram
25203-28500, Sht. 54A&B, PT-102B Pressurizer Loop Diagram
25203-28500, Sht. 56A&B, PT-102C Pressurizer Loop Diagram
25203-28500, Sht. 57A&B, PT-102D Pressurizer Loop Diagram
25203-29193, Sht. 1, Reactor Protective System Functional Diagram
25203-29193, Sht. 6, Reactor Protective System Calibration & Indication Panel Schematic
25203-29193, Sht. 8, Nuclear Instrumentation Reactor Protective System Cabinet Assy. Front Panel Layout
25203-29193, Sht. 11, Trip Unit Assembly Perspective
25203-39069, Sht. 12-15, 21, 22, 24B, Reactor Protective System Schematic
25203-39076, Reactor Protective System Bistable Trip Unit Schematic
25203-39047, Sht.1-4,9-15, Safety Features Actuation System
25212-32001, Sht. 1, Alternate A.C. Diesel Generator Breaker Control
25203-32002, 4.16KV Main Feeder Breaker 34B-24E-2

Licensing Documents

MPS-2 UFSAR Section 6.2, Refueling Water Storage Stank and Containment Sump, Rev. 22-3
MPS-3 UFSAR Section 10.3, Main Steam System, Rev. 18-4
MPS-2 UFSAR Section 9.4, Reactor Building Close Cooling Water System, Rev. 22-4
TS 3/4.7.1.5, Main Steam Line Isolation Valves and Bases, 02/24/05
TS 3/4.7.3, Reactor Building Closed Cooling Water System and Bases, 01/02/03

TS 3/4.7.4, Service Water System and Bases, 02/13/03
TS 3/4.7.11, Ultimate Heat Sink and Bases, 02/24/05
LER 97-015-01, Performance Deficiency of Containment Air Recirculation Coolers During Design Basis Accidents (Response to Generic Letter 96-06), 06/10/99
Ltr. B16104 to NRC, MP2 Assurance of Equipment Operability and Containment Integrity During Design Basis Accidents, 01/28/97
Ltr. B16105 to NRC, MP3 Assurance of Equipment Operability and Containment Integrity During Design Basis Accidents, 01/28/97

System Health Rating Sheets

Unit 2 Auxiliary Feedwater – System 2322 – 1Q05
Unit 2 Auxiliary Feedwater – System 2322 – 2Q05
Unit 2 Auxiliary Feedwater – System 2322 – 3Q05
Unit 2 Auxiliary Feedwater – System 2322 – 4Q05
Unit 3 Auxiliary Feedwater – System 3322 – 1Q05
Unit 3 Auxiliary Feedwater – System 3322 – 2Q05
Unit 3 Auxiliary Feedwater – System 3322 – 3Q05
Unit 3 Auxiliary Feedwater – System 3322 – 4Q05
Unit 3 High Head Safety Injection – System 3308, 3330E – 1Q05
Unit 3 High Head Safety Injection – System 3308, 3330E – 2Q05
Unit 3 High Head Safety Injection – System 3308, 3330E – 3Q05
Unit 3 High Head Safety Injection – System 3308, 3330E – 4Q05
Unit 2 High Head Safety Injection – System 2308 – 1Q05
Unit 2 High Head Safety Injection – System 2308 – 2Q05
Unit 2 High Head Safety Injection – System 2308 – 3Q05
Unit 2 High Head Safety Injection – System 2308 – 4Q05

Miscellaneous Documents

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SP 21156, Reactor Building Closed Cooling Water System Leakage Test, Rev. 003-01
SP 2611A, "A" RBCCW Pump Tests, Rev. 010-01
C SP 760, Battery Discharge Test, Rev. 001
C SP 760-001, Battery DB1-201A Discharge Inspection, Rev. 001
C SP 760-002, Battery DB2-201B Discharge Inspection, Rev. 001
C SP 760-003, Battery DB3-201B Discharge Inspection, Rev. 001
C SP 750-001, Unit 2 Tech Spec Battery Weekly Inspection, Rev. 001
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C SP 760-005, Battery 301A-1 Discharge Inspection, Rev. 001
C SP 760-006, Battery 301A-2 Discharge Inspection, Rev. 001
C SP 760-008, Battery 301B-2 Discharge Inspection, Rev. 001
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SP 2402BR, Pressurizer Pressure Rack Calibration, Rev. 000
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SP 3448E11, Actuation Logic Test of EGLS Autotest System – Train A, Rev. 003-04
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25203-578-0011, Installation, Operation**,** Maintenance of Gate, Globe and Self-Actuated Check Valves (Valve 2-CS-26), Rev. 3
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25203-013-001A, Diesel Generator Service Water Duplex Strainers, Rev. B
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M2-99-12710
M2-98-11346
M2-00-18176
M2-00-18175
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M2-06-00147
M2-05-12647
M2-03-02854

Attachment

Corrective Action Documents

M-06-00724	CR-05-00079	CR-03-04083	CR-05-01014
M-06-03071	CR-03-11918	CR-04-02786	CR-05-01052
DM2-00-0304	CR-04-09483	CR-04-06122	CR-05-01074
DM2-01-0304	CR-05-05495	CR-05-01749	CR-05-01225
DM2-02-0304	CR-05-06952	CR-06-01009	CR-05-07228
DM2-00-1684-98	CR-05-01703	CR-06-01011	CR-05-07229
DM2-00-1690-98	CR-05-03904	CR-02-07478	CR-05-08920
DM2-00-0149-99	CR-05-10425	CR-02-07506	CR-05-12235
DM2-01-0149-99	CR-05-10321	CR-02-07529	CR-05-12525
DM2-00-0864-99	CR-05-03735	CR-03-00881	CR-05-13108
DM2-01-0864-99	CR-05-12316	CR-03-00921	CR-06-00168
DM2-02-0864-99	CR-06-00406	CR-03-06038	CR-06-03049
DM2-00-0898-99	CR-06-00808	CR-03-06825	CR-03-01719
DM2-00-0972-99	CR-06-01791	CR-04-00521	CR-03-12610
DM2-01-0972-99	CR-06-03060	CR-04-02415	CR-03-12650
DM2-00-0348-00	CR-06-03068	CR-05-06800	CR-04-10445
DM2-00-0362-00	CR-06-03071	CR-05-08814	CR-04-10446
DM2-00-0168-01	CR-06-03224	CR-05-13343	CR-04-10535
DM2-00-0399-05	CR-06-03139	CR-06-02955	CR-05-08835
DM3-00-0116-03	CR-06-03223	CR-03-06037	CR-05-12550
DM3-00-0227-05	CR-04-06286	CR-03-12593	CR-06-01430
DM3-00-0045-06	CR-02-11427	CR-03-12602	CR-06-04560
DM3-00-0059-06	CR-03-11898	CR-03-12603	CR-02-08312
DM3-00-0232-01	CR-04-06405	CR-03-12710	CR-03-12085
M2-99-0056	CR-05-08065	CR-04-00593	CR-03-12088
M2-00-1547	CR-02-12000	CR-04-00597	CR-04-07125
M2-00-1301	CR-03-00004	CR-05-08722	CR-04-08265
M2-00-1291	CR-03-03273	CR-05-08752	CR-04-08444
M2-00-0920	CR-06-00337	CR-05-08769	CR-05-00371
M2-00-1372	CR-03-00099	CR-05-08796	CR-05-00654
M2-00-1528	CR-04-11095	CR-05-12544	CR-05-01549
M2-00-1577	CR-05-05406	CR-05-12594	CR-05-04511
M2-00-1630	CR-05-09194	CR-05-12642	CR-05-08169
M2-00-1547	CR-04-01583	CR-06-04532	CR-05-08621
M2-00-1163	CR-05-10118	CR-03-01575	CR-05-09369
M2-99-0627	CR-03-09825	CR-03-03204	CR-05-10652
M2-00-3424	CR-05-03206	CR-03-06018	CR-05-10924
M2-00-1892	CR-05-09009	CR-03-06039	CR-05-11534
MP2-070-04	CR-06-05264	CR-03-08781	CR-05-12232
MP3-004-06	CR-06-05010	CR-03-08795	CR-05-12892
MP3-002-06	CR-06-04956	CR-03-08797	CR-05-13695
MP3-003-06	CR-06-05372	CR-04-01215	CR-06-00529
CR-04-1065	CR-06-05341	CR-04-05339	CR-06-00595
CR-04-02256	CR-06-05572	CR-04-08899	CR-06-01127
CR-04-03999	CR-06-05819	CR-04-08919	CR-06-01991
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Attachment

LIST OF ACRONYMS USED

AC	Alternating Current
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
CCW	Component Cooling Water
CDBI	[NRC] Component Design Bases Inspection
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CRED	Condition Report Engineering Disposition Form
CVCS	Chemistry and Volume Control System
CR	Condition Report
CS	Containment Spray
DC	Direct Current
DCN	Design Change Notice
DCR	Design Change Request
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedures
FSAR	Final Safety Analysis Report
GL	[NRC] Generic Letter
HPSI	High Pressure Safety Injection
Hz	Hertz
gpm	Gallons per Minute
HRA	Human Reliability Analysis
IMC	[NRC] Inspection Manual Chapter
IN	[NRC] Information Notice
IP	[NRC] Inspection Procedure
IST	In-service Testing
JPM	Job Performance Measure
kV	Kilo Volts
LNP	Loss of Normal Power
LOCA	Loss of Coolant Accident
LOOP	Loss of Off-site Power
MDAFP	Motor Driven Auxiliary Feedwater Pump
MOV	Motor Operated Valve
MSIV	Main Steam Isolation Valve
NCV	[NRC] Non-cited Violation
NEI	Nuclear Energy Institute
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
NSST	Normal Station Service Transformer
OE	Operating Experience
P&ID	Piping and Instrument Diagram
PI&R	Problem Identification and Resolution
PORV	Power Operated Relief Valve
PRA	Probabilistic Risk Analysis
PT	Pressure Transmitter

RAW	Risk Achievement Worth
RBCCW	Reactor Building Closed Cooling Water
RCP	Reactor Coolant Pump
RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RRW	Risk Reduction Worth
RSST	Reserve Station Service Transformer
RWST	Refueling Water Storage Tank
SBO	Station Blackout
SDP	Significance Determination Process
SG	Steam Generator
SI	Safety Injection
SP	Surveillance Procedure
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
SSC	System, Structure, or Component
SW	Service Water
TB	Technical Bulletin
TBCCW	Turbine Building Closed Cooling Water
TDAFP	Turbine Driven Auxiliary Feedwater Pump
TS	Technical Specification
WO	Work Order
UFSAR	Undated Final Safety Analysis Report
UPS	Uninterruptible Power Supply
URI	Unresolved Item
Vac	Volts Alternating Current
VCT	Volume Control Tank
Vdc	Volts Direct Current