Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385

Dominion

MAY 7 2002

Docket No. 50-336
B18634

RE: 10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 2
License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling
and Auxiliary Feedwater Systems

Introduction

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to amend Operating License DPR-65 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 2. DNC is proposing to change Technical Specifications 3.1.1.3, "Reactivity Control Systems - Boron Dilution;" 3.1.2.1, "Reactivity Control Systems - Boration Systems - Flow Paths - Shutdown;" 3.1.2.2, "Reactivity Control Systems - Boration Systems - Flow Paths - Operating;" 3.1.2.3, "Reactivity Control Systems - Charging Pump - Shutdown;" 3.1.2.4, "Reactivity Control Systems - Charging Pumps - Operating;" 3.1.2.5, "Reactivity Control Systems - Boric Acid Pumps - Shutdown;" 3.1.2.6, "Reactivity Control Systems - Boric Acid Pumps - Operating;" 3.1.2.7, "Reactivity Control Systems – Borated Water Sources - Shutdown;" 3.1.2.8, "Reactivity Control Systems – Borated Water Sources - Operating;" 3.5.2, "Emergency Core Cooling Systems - ECCS Subsystems - Tavg $\geq$ 300 °F;" 3.5.3, "Emergency Core Cooling Systems - ECCS Subsystems - Tavg < 300 °F;" 3.6.2.1, "Containment Systems - Depressurization and Cooling Systems - Containment Spray and Cooling Systems;" and 3.7.1.2, "Plant Systems - Auxiliary Feedwater Pumps." The index and the associated Bases for these Technical Specifications will be modified to address the proposed changes.

The proposed changes will relocate the Boration System Technical Specification requirements to the Technical Requirements Manual, relocate boron dilution analysis restrictions within Technical Specifications, and revise the Technical Specification Limiting Condition for Operation (LCO) action, and surveillance requirements associated with the Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems.

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Attachment 1 provides a discussion of the proposed changes and the Safety Summary. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides the marked-up version of the appropriate pages of the current Technical Specifications. Attachment 4 provides the retyped pages of the Technical Specifications.

Environmental Considerations

DNC has evaluated the proposed changes against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.22. DNC has determined that the proposed changes meet the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that the changes are being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to use of a facility component located within the restricted area, as defined by 10 CFR 20, or that changes an inspection or a surveillance requirement, and that the amendment request meets the following specific criteria.

(i) The proposed changes involve no Significant Hazards Consideration.

As demonstrated in Attachment 2, the proposed changes do not involve a Significant Hazards Consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released off site.

The proposed changes will relocate the Boration System Technical Specification requirements to the Technical Requirements Manual, relocate boron dilution requirements within Technical Specifications, and revise the Technical Specification LCO, action, and surveillance requirements associated with the Emergency Core Cooling, Containment Spray and Cooling, and Auxiliary Feedwater Systems. The proposed changes are consistent with the design basis of the plant and the associated design basis accident analyses. The proposed changes will not result in an increase in power level, will not increase the production of radioactive waste and byproducts, and will not alter the flowpath or method of disposal of radioactive waste or byproducts. Therefore, the proposed changes will not increase the type and amounts of effluents that may be released off site.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will relocate the Boration System Technical Specification requirements to the Technical Requirements Manual, relocate boron dilution requirements within Technical Specifications, and revise the Technical Specification LCO, action, and surveillance requirements associated with the

Emergency Core Cooling, Containment Spray and Cooling, and Auxiliary Feedwater Systems. The proposed changes will not result in changes in the configuration of the facility. There will be no change in the level of controls or methodology used for processing radioactive effluents or the handling of solid radioactive waste. There will be no change to the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from the proposed changes.

Conclusions

The proposed changes have been evaluated and we have concluded the proposed changes are safe. The proposed changes do not involve an adverse impact on public health and safety (see the Safety Summary provided in Attachment 1) and do not involve a Significant Hazards Consideration pursuant to the provisions of 10 CFR 50.92 (see the Significant Hazards Consideration provided in Attachment 2).

Site Operations Review Committee and Nuclear Safety Assessment Board

The Site Operations Review Committee and Nuclear Safety Assessment Board have reviewed and concurred with the determinations.

Schedule

We request issuance of this amendment for Millstone Unit No. 2 by May 31, 2003, with the amendment to be implemented within 90 days of issuance.

Additional Conditions

We request the following additional conditions apply to the proposed License Amendment.

For surveillance requirements that are new in this amendment, the first performance is due at the end of the first surveillance interval that begins on the date of implementation of this amendment. For surveillance requirements that existed prior to this amendment whose intervals of performance are being extended, the first extended surveillance interval begins upon completion of the last surveillance performed prior to the implementation of this amendment.

State Notification

In accordance with 10 CFR 50.91(b), a copy of this License Amendment Request is being provided to the State of Connecticut.

There are no regulatory commitments contained within this letter.

If you should have any questions on the above, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

J. Alan Price
Site Vice President - Millstone

Sworn to and subscribed before me

this 7th day of May, 2002

Notary Public

My Commission expires SANDRA J. ANTON
NOTARY PUBLIC
COMMISSION EXPIRES
MAY 31, 2005

Attachments (4)

cc: H. J. Miller, Region I Administrator
R. B. Ennis, NRC Senior Project Manager, Millstone Unit No. 2
NRC Senior Resident Inspector, Millstone Unit No. 2

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems
Discussion of Proposed Changes and Safety Summary

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems
Discussion of Proposed Changes and Safety Summary

Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to amend Operating License DPR-65 by incorporating the attached proposed changes into the Technical Specifications of Millstone Unit No. 2. DNC is proposing to change Technical Specifications 3.1.1.3, "Reactivity Control Systems - Boron Dilution;" 3.1.2.1, "Reactivity Control Systems - Boration Systems - Flow Paths - Shutdown;" 3.1.2.2, "Reactivity Control Systems - Boration Systems - Flow Paths - Operating;" 3.1.2.3, "Reactivity Control Systems - Charging Pump - Shutdown;" 3.1.2.4, "Reactivity Control Systems - Charging Pumps - Operating;" 3.1.2.5, "Reactivity Control Systems - Boric Acid Pumps - Shutdown;" 3.1.2.6, "Reactivity Control Systems - Boric Acid Pumps - Operating;" 3.1.2.7, "Reactivity Control Systems – Borated Water Sources - Shutdown;" 3.1.2.8, "Reactivity Control Systems – Borated Water Sources - Operating;" 3.5.2, "Emergency Core Cooling Systems - ECCS Subsystems - Tavg $\geq$ 300 °F;" 3.5.3, "Emergency Core Cooling Systems - ECCS Subsystems - Tavg $<$ 300 °F;" 3.6.2.1, "Containment Systems - Depressurization and Cooling Systems - Containment Spray and Cooling Systems;" and 3.7.1.2, "Plant Systems - Auxiliary Feedwater Pumps." The index and associated Bases for these Technical Specifications will be modified to address the proposed changes.

The proposed changes will relocate the Boration System (BS) Technical Specification requirements to the Technical Requirements Manual (TRM). As a result of revising the Millstone Unit No. 2 Loss of Coolant Accident (LOCA) analysis, it is no longer necessary to retain the BS requirements in the Millstone Unit No. 2 Technical Specifications. Additional changes to retain boron dilution analysis restrictions have been included as a result of the relocation of the BS requirements to the TRM.

The proposed changes will also revise the Technical Specification Limiting Condition for Operation (LCO), action, and surveillance requirements associated with the Emergency Core Cooling, Containment Spray and Cooling, and Auxiliary Feedwater Systems. The proposed changes will remove redundant testing requirements that are already addressed by the Inservice Testing (IST) Program, which is required pursuant to Technical Specification 4.0.5. The proposed changes will also replace the acceptance criteria and frequency requirements of some surveillance requirements with a reference to Technical Specification 4.0.5 (IST Program). The IST Program will verify the specific acceptance criteria, based on design basis requirements, and control the frequency of test performance. The proposed changes will increase the allowed outage time (AOT) and shutdown time for an inoperable train (subsystem) of the Emergency Core Cooling System (ECCS) consistent with standard industry guidelines and other Millstone Unit No. 2 Technical Specifications.

Revised Loss of Coolant Analysis

The Millstone Unit No. 2 LOCA analysis has recently been revised. The revised LOCA analysis, using methods previously approved for Millstone Unit No. 2,[1] no longer credits flow from the Chemical and Volume Control System (CVCS) charging pumps for accident mitigation. As a result, it is no longer necessary to include operability requirements for the boration and charging aspects of the CVCS in the Millstone Unit No. 2 Technical Specifications. Therefore, changes have been included in this submittal to relocate the BS requirements (Technical Specification Section 3/4.1.2) to the TRM and to revise the ECCS requirements (Technical Specification 3.5.2). Technical Specification 3.5.2 will retain a requirement for two operable charging pumps to support the risk significance of these pumps as discussed in the Safety Summary section of this attachment. The operability requirements for the charging pumps will be based on the ability of the pumps to provide adequate flow. The requirements for the charging pumps, boric acid pumps, and the boric acid gravity feed valves to actuate on a Safety Injection Actuation Signal (SIAS) will be transferred to the TRM. No plant design changes are currently planned to remove the automatic actuation of the charging pumps and associated support system (e.g., boric acid pumps) in response to a SIAS.

A brief description of the plant response during loss of coolant accidents is presented to explain how the charging pumps are designed to respond. The plant response to a LOCA will depend on many variables including size of the break, available makeup capacity, and power history. A large break loss of coolant accident (LBLOCA) will result in a rapid depressurization of the Reactor Coolant System (RCS). This will result in the generation of a SIAS, followed by a Containment Spray Actuation Signal (CSAS). Borated makeup water from the Refueling Water Storage Tank (RWST) will be delivered to the RCS by the High Pressure Safety Injection (HPSI) pumps when RCS pressure decreases below the shutoff head of the HPSI pumps (approximately 1200 psia), by the Safety Injection Tanks (SITs) when RCS pressure decreases below approximately 250 psia, and by the Low Pressure Safety Injection (LPSI) pumps when RCS pressure decreases below the shutoff head of the LPSI pumps (approximately 200 psia). Sufficient heat will be removed from the RCS by the safety injection water and the break flow to adequately cool the reactor core.

Additional borated makeup water from the Boric Acid Storage Tanks (BASTs) will be delivered to the RCS by the charging pumps. Since the charging pumps are positive displacement pumps, delivered flow to the RCS will not be dependent on RCS pressure. (This flow is no longer credited for LOCA mitigation.) Containment pressure will initially increase as RCS inventory is released to the containment atmosphere. The Containment Spray (CS) pumps will deliver water from the RWST to the containment

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[1] J. I. Zimmerman, U.S. Nuclear Regulatory Commission letter to Northeast Nuclear Energy Company, "Millstone Nuclear Power Station, Unit No. 2, Issuance of Amendment RE: Updating Core Operating Limits Report Documents List (TAC No. MA7308)," Licensee Amendment No. 242, dated March 17, 2000.

atmosphere to remove heat and reduce containment pressure. The Containment Air Recirculation (CAR) fans will also remove heat from the containment atmosphere.

After the inventory in the RWST has been depleted, a Sump Recirculation Actuation Signal (SRAS) will be generated which will transfer the suction of the HPSI and CS pumps to the containment sump, secure the LPSI pumps, and initiate cooling to the Shutdown Cooling (SDC) heat exchangers.

After the inventory in the BASTs has been depleted, the charging pumps are manually switched to the RWST or secured by the plant operators.

For a LBLOCA it is not expected that the RCS will refill. Therefore, decay heat will be removed by safety injection water and flow out of the break, and indirectly by the CS System and the CAR fans. At 8 to 10 hours after the LOCA, assuming the RCS has not refilled, simultaneous hot and cold leg injection will be established to provide core flushing to prevent boron precipitation.

A small break loss of coolant accident (SBLOCA) will also result in depressurization of the RCS, but at a slower rate. This will result in the generation of a SIAS, and possibly a CSAS. Borated makeup water from the RWST will be delivered to the RCS by the HPSI pumps when RCS pressure decreases below the shutoff head of the HPSI pumps (approximately 1200 psia). If the break is too small, heat removal by injection flow and break flow will not be sufficient. An additional heat sink, the steam generators, will be necessary. In this situation the RCS will not continue to depressurize. Therefore, SIT injection and LPSI flow will not occur initially. Additional borated makeup water from the BASTs will be delivered to the RCS by the charging pumps (flow no longer credited for LOCA mitigation).

Containment pressure will initially increase as RCS inventory is released to the containment atmosphere. The CS pumps, if actuated, will deliver water from the RWST to the containment atmosphere to remove heat and reduce containment pressure. The CAR fans will also remove heat from the containment atmosphere.

After the inventory in the RWST has been depleted, a SRAS will be generated which will transfer the suction of the HPSI and CS pumps to the containment sump, secure the LPSI pumps, and initiate cooling to the SDC heat exchangers. It may take a significant amount of time to deplete the RWST inventory and reach the SRAS setpoint, especially if a CSAS has not been generated. After the inventory in the BASTs has been depleted, the charging pumps are manually switched to the RWST or secured by the plant operators.

At 8 to 10 hours after the SBLOCA, the operator will determine if the RCS is filled by checking pressurizer level and subcooling margin. If the RCS is filled, natural circulation, using the steam generators, will prevent boric acid precipitation. If the RCS has not refilled, simultaneous hot and cold leg injection will be necessary, as previously discussed.

Millstone Unit No. 2 Inservice Testing Program

The Millstone Unit No. 2 IST Program covers ASME Code Class 1, 2, and 3 pumps and valves. This program contains the test requirements for each component, approved alternatives to the test requirements where implemented, and special comments or conditions associated with each component. Some safety significant non-ASME Class 1, 2 or 3 components have been included in the IST Program as augmented testing.

The Third Ten-Year IST Interval, which began on April 1, 1999, was developed in accordance with the requirements of ASME/ANSI OM-1987[(2)] and Addenda OMa-1988, which is referenced from 10 CFR 50.55a and ASME Section XI, 1989 edition. The guidelines of NUREG-1482,[(3)] that provide acceptable alternative methods of inservice testing have been adopted, where noted.

Components that provide a specific function in shutting down the reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an analyzed accident are called "safety-related components" in this document. Millstone Unit No. 2 was licensed for hot shutdown. However, in recognition of the concern for the ability to provide long term cooling post-accident, components required to bring the reactor to cold shutdown, and maintain the reactor at cold shutdown have been included in the program as augmented tests.

The Millstone Unit No. 2 IST Program covers the following safety related systems.

- Auxiliary Feedwater System
- Chemical and Volume Control System (Charging, Boric Acid)
- Chilled Water System (Vital)
- Containment Spray System
- Containment Ventilation System (CIVs Only)
- Diesel Generator (Non ASME Code Augmented Testing)
- Enclosure Building Filtration System (CIVs Only)
- Fire Protection System (CIVs Only)
- Gaseous Radwaste System (CIVs Only)
- Instrument Air System (CIVs Only)
- Liquid Radwaste System (CIVs Only)
- Main Steam System
- Primary Makeup Water System (CIVs Only)
- Reactor Building Closed Cooling Water System

(2) ASME/ANSI OM-1987, "Operation and Maintenance of Nuclear Power Plants, Inservice Testing of Valves in Light Water Reactor Power Plants," dated 1987.

(3) NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," April 1995.

- Reactor Coolant System
- High Pressure Safety Injection System
- Low Pressure Safety Injection System
- Service Water System
- Spent Fuel Pool Cooling System
- Station Air (CIVs Only)

The criteria for valves included in Millstone Unit No. 2 IST Program are:

- Active and passive valves which are required to perform a specific function in shutting down the reactor to a safe shutdown condition.
- Active and passive valves which are required to perform a specific function in maintaining the safe shutdown condition.
- Active and passive valves which are required to perform a specific function in mitigating the consequences of an accident.
- Pressure relief devices that protect systems or portions of systems which perform a required function in shutting down the reactor to a safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident.
- If repositioning of a manual valve is credited in the safety analysis, the valve is included in the IST Program and tested in accordance with ASME/ANSI OM-1987. Passive manual valves are not included in the IST Program testing unless they have remote position indication or require leak rate testing.

The criteria for pumps included in Millstone Unit No. 2 IST Program are:

- All ASME Code Class 1, 2, or 3 pumps provided with an emergency power source which are required to perform a specific function in shutting down the reactor to a safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident.
- Pumps which are provided with an emergency power source solely for operating convenience are excluded.

The IST Program (Technical Specification 4.0.5) will verify the component acceptance criteria, consistent with design basis requirements, and control the frequency of test performance. The acceptance criteria (e.g., valve stroke time, pump developed head, pump flowrate) is based on the assumed component operation. Performance of the required testing will verify proper component operation, and will be able to detect component degradation. The frequency of test performance may change based on equipment performance.

The use of the IST Program to control pump and valve testing is consistent with current industry practices and published guidelines. Many of the surveillance requirements contained in NUREG-1432[4] illustrate the use of the IST Program to verify the acceptance criteria and control the frequency of test performance. The surveillance requirements contained in NUREG-1432 refer to the IST Program instead of Specification 4.0.5. NUREG-1432 has replaced Specification 4.0.5 with a program contained in Section 5 (Technical Specification 5.5.8, "Inservice Testing Program"). However, since the Millstone Unit No. 2 Technical Specifications still contains Technical Specification 4.0.5, the proposed surveillance requirements will refer to "Specification 4.0.5."

Technical Specification Changes

Each proposed Technical Specification change, identified by specification, will be discussed. Table 1, located at the end of this attachment, summarizes the proposed changes to the surveillance requirements.

Index

Changes to the index are necessary as a result of the proposed relocation of Technical Specifications 3.1.2.1, 3.1.2.2, 3.1.2.3, 3.1.2.4, 3.1.2.5, 3.1.2.6, 3.1.2.7, and 3.1.2.8 to the TRM. The entries for these specifications on Index Page IV will be replaced with the word "DELETED." The entry for Bases Section 3/4.1.2 on Index Page XI will also be replaced with the word "DELETED."

Technical Specification 3.1.1.3

The restriction that limits the number of charging pumps capable of injecting into the RCS to a maximum of two when less than 300°F will be relocated from Technical Specifications 3.1.2.3 and 3.1.2.4 to this specification. The relocation of this boron dilution analysis assumption will result in the following changes. This proposed relocation will not result in any technical change to this restriction.

1. The LCO will be modified to contain two plant operating restrictions. The current LCO restriction associated with minimum RCS flow during boron concentration reductions will be designated as "a."

2. LCO item b. will be added to address the restriction of a maximum of two charging pumps capable of injecting into the RCS when temperature is less than 300°F. This new LCO item contains the LCO requirement of Technical Specification 3.1.2.3 and the LCO footnote (**) requirement of Technical Specification 3.1.2.4.

[4] NUREG-1432, "Standard Technical Specifications Combustion Engineering Plants," Revision 2, April 2001.

3. The current action requirement will be modified to contain two actions. The current action associated with minimum RCS flow during boron concentration reductions will be designated as "a."

4. Action b. will be added to address the restriction of a maximum of two charging pumps capable of injecting into the RCS when temperature is less than 300°F. This new action requirement contains the requirements of Action b. of Technical Specifications 3.1.2.3 and 3.1.2.4.

5. Surveillance Requirement (SR) 4.1.1.3 will be renumbered as 4.1.1.3.1 to allow the addition of a new surveillance requirement associated with the relocated restriction. The footnote (*) reference to this surveillance requirement will also be renumbered as 4.1.1.3.1.

6. SR 4.1.1.3.2 will be added to address the restriction of a maximum of two charging pumps capable of injecting into the RCS when less than 300°F. This new surveillance contains the requirements of SRs 4.1.2.3.2 and 4.1.2.4.2.

Technical Specifications 3.1.2.1 through 3.1.2.8

The requirements of Technical Specifications 3.1.2.1 through 3.1.2.8, except the boron dilution analysis restriction as previously discussed, will be relocated to the TRM. The requirements contained in these specifications do not meet the criteria contained in 10 CFR 50.36c(2)(ii) for items that must be in Technical Specifications. Refer to the Safety Summary contained in this attachment for a discussion of this criteria. The phrase "This Page Intentionally Left Blank" will be added to Pages 3/4 1-8 through 3/4 1-11 and 3/4 1-13 through 3/4 1-19.

Technical Specification 3.5.2

1. The phrase "separate and independent" will be removed from the LCO. The degree of separation and the level of independence between the ECCS subsystems (trains) is a design feature of the ECCS. The Millstone Unit No. 2 Final Safety Analysis Report (FSAR) describes the approved degree of separation and level of independence between ECCS subsystems. If the approved degree of separation and level of independence are not maintained, an evaluation will be necessary to determine ECCS subsystem operability. Therefore, it is not necessary to include a requirement for the ECCS subsystems to be separate and independent in Technical Specifications.

2. The phrase "with each subsystem comprised of:" will be deleted, and the requirements contained in LCO items a. through c. will be relocated to the Bases for this specification. The resultant LCO will still require two ECCS subsystems to be operable, but the detail of what constitutes an ECCS subsystem will no longer be contained in the LCO. The Bases is an appropriate location for this additional information (NUREG-1432, Technical Specification 3.5.2).

Since the revised Millstone Unit No. 2 LOCA analysis no longer credits charging pump flow for design basis accident mitigation, it is not necessary to include requirements (LCO item d.) for the BASTs, boric acid pumps or boric acid gravity feed valves (support equipment for charging pump operation following a SIAS). However, the charging pumps are risk significant equipment due to their role in the mitigation of two beyond design basis events. These plant operating Mode 1 events, Anticipated Transient Without Scram and Complete Loss of Secondary Heat Sink, rely on the charging pumps to provide flow to the RCS. Charging pump flow is initiated by operator action as no automatic SIAS is expected to be generated in response to either of these two events. Therefore, requirements for charging pump operability will be retained in Technical Specification 3.5.2 (as specified in the revised Bases and proposed SR 4.5.2.e), but the requirements associated with automatic actuation on a SIAS for design basis accident mitigation will be relocated to the TRM. Refer to the Safety Summary contained in this attachment for a discussion of the criteria contained in 10 CFR 50.36c(2)(ii) for items that must be in Technical Specifications.

The changes identified above will require the addition of a period after "OPERABLE." This is a non-technical change.

3. The AOT to restore an inoperable ECCS subsystem (Action a.) will be increased from 48 hours to 72 hours. Use of a 72 hour AOT is consistent with the time allowed to restore an inoperable Emergency Diesel Generator (EDG) as specified by Technical Specification 3.8.1.1 (normal AOT), and is consistent with standard industry guidelines contained in NUREG-0212 (Technical Specification 3.5.2).[5]

   The required plant condition (Action a.) if an inoperable ECCS subsystem is not restored to operable status will be changed. The phrase "HOT SHUTDOWN within the next 12 hours" will be replaced by the phrase "HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours." The current requirement to be in Hot Shutdown is not consistent with the applicability of this specification (Mode 3 with pressurizer pressure $\geq$ 1750 psia). The proposed change will make the action requirement consistent with the applicability. The shutdown time will be divided into two 6 hour blocks, but the total shutdown time of 12 hours will not change. The structure of the proposed shutdown statement is consistent with Technical Specification 3.5.1, "Safety Injection Tanks (SITS)," and NUREG-1432 (Technical Specification 3.5.2). This will not result in any technical change since this is consistent with the current applicability of this specification and the total shutdown time will remain at 12 hours.

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[5] NUREG-0212, "Standard Technical Specifications for Combustion Engineering Pressurized Water Reactors," Revision 2, Fall 1980.

The phrase "Amendment No. 52" will be added to the bottom of Page 3/4 5-3. This page was changed by Amendment No. 52, which was issued on May 12, 1979.[6] This is a non-technical change.

4. The current HPSI pump requirements of SR 4.5.2.a.1 will be combined into the proposed SR 4.5.2.c. This will result in the following changes to the current requirements.

   a. The proposed frequency of "when tested pursuant to Specification 4.0.5" will result in an initial change in test frequency from 31 days to 92 days. The IST Program specifies a minimum test performance interval of 92 days, which may become more frequent based on equipment performance. The frequency change, although less restrictive, is consistent with standard industry practices and guidelines.

      Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires ECCS subsystem components to be tested every 15 days (31 days divided by number of required pumps). With the proposed change to use Technical Specification 4.0.5 to control test frequency, each HPSI pump will be tested every 92 days. This would require one required pump to be tested every 46 days if the requirement to test on a staggered test basis were retained. There is little or no benefit to specifying performance of SR 4.5.2.c on a staggered test basis since each required pump will be tested every 92 days. There would be no change in the surveillance frequency specified by the IST Program by performing this on a staggered test basis. This is consistent with standard industry practices and guidelines.

   b. SR 4.5.2.a.1.a will be deleted. It is not necessary to require the HPSI pumps to start automatically on a test signal as part of the surveillance that checks for pump degradation. Verification of the ability of the HPSI pumps to start automatically on an actual or simulated actuation signal will be checked by the proposed SR 4.5.2.g. The proposed SR 4.5.2.g will verify the ability of the HPSI pumps to start automatically on an 18 month frequency instead of the current 31 day interval. A review of the past performance of the associated pumps has not indicated a failure rate that would warrant a 31 day frequency. In addition, the proposed frequency is consistent with other current Millstone Unit No. 2 automatic pump testing requirements (e.g., SR 4.7.1.2.c.2 for AFW pumps) and with standard industry practices and guidelines.

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[6] U.S. Nuclear Regulatory Commission letter to W. G. Counsil, "Amendment No. 52 to Facility Operating License No. DPR-65 for Millstone Nuclear Power Station, Unit No. 2," dated May 12, 1979.

The wording has been modified to allow the use of an actual or simulated actuation signal, instead of just a simulated signal, to test this function. This will provide additional flexibility in test performance. It will not result in any technical change to how this protective feature functions.

c. The pump acceptance criteria contained in SR 4.5.2.a.1.b will not be retained in the proposed SR 4.5.2.c. The pump acceptance criteria specified by design basis requirements is verified by the IST Program, which is referenced (Specification 4.0.5) in the proposed SR 4.5.2.c. It is not necessary to specify the acceptance criteria in the surveillance requirement. The IST Program provides sufficient control of this value to ensure the associated pumps will perform as assumed in the accident analysis. Removal of this specific value will not adversely impact test performance. This approach, to allow the IST Program to specify the acceptance criteria, based on design basis requirements, is consistent with standard industry practices and guidelines (NUREG-1432, SR 3.5.2.4, TSTF-78).

d. SR 4.5.2.a.1.c will be deleted. It is not necessary to specify how long the HPSI pumps need to operate. The IST Program will provide sufficient guidance to ensure the HPSI pumps are operated a sufficient time to provide reliable test results. Removal of this requirement will not adversely impact test performance.

5. The current LPSI pump requirements of SR 4.5.2.a.2 will be combined into the proposed SR 4.5.2.d. This will result in the following changes to the current requirements.

   a. The proposed frequency of "when tested pursuant to Specification 4.0.5" will result in an initial change in test frequency from 31 days to 92 days. The IST Program specifies a minimum test performance interval of 92 days, which may become more frequent based on equipment performance. The frequency change, although less restrictive, is consistent with standard industry practices and guidelines.

   Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires ECCS subsystem components to be tested every 15 days (31 days divided by number of required pumps). With the proposed change to use Technical Specification 4.0.5 to control test frequency, each HPSI pump will be tested every 92 days. This would require one required pump to be tested every 46 days if the requirement to test on a staggered test basis were retained. There is little or no benefit to specifying performance of SR 4.5.2.d on a staggered test basis since each required pump will be tested every 92 days.

There would be no change in the surveillance frequency specified by the IST Program by performing this on a staggered test basis. This is consistent with standard industry practices and guidelines.

b. SR 4.5.2.a.2.a will be deleted. It is not necessary to require the LPSI pumps to start automatically on a test signal as part of the surveillance that checks for pump degradation. Verification of the ability of the LPSI pumps to start automatically on an actual or simulated actuation signal will be check by the proposed SR 4.5.2.g. The proposed SR 4.5.2.g will verify the ability of the LPSI pumps to start automatically on an 18 month frequency instead of the current 31 day interval. A review of the past performance of the associated pumps has not indicated a failure rate that would warrant a 31 day frequency. In addition, the proposed frequency is consistent with other current Millstone Unit No. 2 automatic pump testing requirements (e.g., SR 4.7.1.2.c.2 for AFW pumps) and with standard industry practices and guidelines.

   The wording has been modified to allow the use of an actual or simulated actuation signal, instead of just a simulated signal, to test this function. This will provide additional flexibility in test performance. It will not result in any technical change to how this protective feature functions.

c. The pump acceptance criteria contained in SR 4.5.2.a.2.b will not be retained in the proposed SR 4.5.2.d. The pump acceptance criteria specified by design basis requirements is verified by the IST Program, which is referenced (Specification 4.0.5) in the proposed SR 4.5.2.d. It is not necessary to specify the acceptance criteria in the surveillance requirement. The IST Program provides sufficient control of this value to ensure the associated pumps will perform as assumed in the accident analysis. Removal of this specific value will not adversely impact test performance. This approach, to allow the IST Program to specify the acceptance criteria, based on design basis requirements, is consistent with standard industry practices and guidelines (NUREG-1432, SR 3.5.2.4, TSTF-78).

d. SR 4.5.2.a.2.c will be deleted. It is not necessary to specify how long the LPSI pumps need to operate. The IST Program will provide sufficient guidance to ensure the LPSI pumps are operated a sufficient time to provide reliable test results. Removal of this requirement will not adversely impact test performance.

e. SR 4.5.2.h will be added to verify the ability of the LPSI pumps to stop automatically on an actual or simulated actuation signal. The proposed SR 4.5.2.h will verify the ability of the LPSI pumps to stop automatically on an 18 month frequency. The proposed frequency is consistent with other current Millstone Unit No. 2 automatic pump testing requirements (e.g., SR 4.7.1.2.c.2 for AFW pumps) and with standard industry practices and guidelines (NUREG-1432, SR 3.5.2.8). A review of the past performance of the associated pumps has not indicated a failure rate that would warrant a different frequency. This is a more restrictive change.

6. The current charging pump requirements of SR 4.5.2.a.3 will be relocated to the proposed SR 4.5.2.e. This will result in the following changes to the current requirements.

   a. The proposed frequency of "when tested pursuant to Specification 4.0.5" will result in an initial change in test frequency from 31 days to 92 days. The IST Program specifies a minimum test performance interval of 92 days, which may become more frequent based on equipment performance. The frequency change, although less restrictive, is consistent with standard industry practices and guidelines.

      Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires ECCS subsystem components to be tested every 15 days (31 days divided by number of required pumps). With the proposed change to use Technical Specification 4.0.5 to control test frequency, each HPSI pump will be tested every 92 days. This would require one required pump to be tested every 46 days if the requirement to test on a staggered test basis were retained. There is little or no benefit to specifying performance of SR 4.5.2.e on a staggered test basis since each required pump will be tested every 92 days. There would be no change in the surveillance frequency specified by the IST Program by performing this on a staggered test basis. This is consistent with standard industry practices and guidelines.

   b. SR 4.5.2.a.3.a will be deleted. It is not necessary to require the charging pumps to start automatically on a test signal as part of the surveillance that checks for pump degradation. In addition, verification of the ability of the charging pumps to start automatically on an actual or simulated actuation signal will be relocated to the TRM along with the requirements of Technical Specification 3.1.2.4. As previously identified, the revised Millstone Unit No. 2 LOCA analysis no longer credits charging pump flow for design basis accident mitigation. However, the charging pumps have been identified as risk significant equipment for the mitigation of two beyond design basis events. These events rely on the charging pumps to provide flow to the RCS, but do not require the charging pumps to start automatically on a SIAS. The expected plant response to these events will not result in the generation of an automatic SIAS.

c. The requirement to verify the charging pumps meet the pump acceptance criteria, as required by the IST Program (Specification 4.0.5), will be added to the proposed SR 4.5.2.e. It is not necessary to specify the acceptance criteria in the surveillance requirement. The IST Program provides sufficient control of this value to ensure the associated pumps will perform as required for mitigation of the beyond design basis events. This will not adversely impact test performance. This approach, to allow the IST Program to specify the acceptance criteria, is consistent with the current requirement which does not include the pump acceptance criteria and with the proposed surveillance requirements for the HPSI and LPSI pumps. This is a more restrictive change.

d. SR 4.5.2.a.3.b will be deleted. It is not necessary to specify how long the charging pumps need to operate. The IST Program will provide sufficient guidance to ensure the charging pumps are operated a sufficient time to provide reliable test results. Removal of this requirement will not adversely impact test performance.

7. The current boric acid pump requirements of SR 4.5.2.a.4 will be relocated to the TRM along with the requirements of Technical Specification 3.1.2.6. Since the revised Millstone Unit No. 2 LOCA analysis no longer credits charging pump flow for design basis accident mitigation, it is not necessary to include requirements for the boric acid pumps which support charging pump operation following the generation of a SIAS. Refer to the Safety Summary contained in this attachment for a discussion of the criteria contained in 10 CFR 50.36c(2)(ii) for items that must be in Technical Specifications. This is a less restrictive change.

8. The current requirements of SR 4.5.2.a.5 will be combined into the proposed SR 4.5.2.f. This surveillance requirement will require verification that automatic valves associated with the ECCS actuate to the correct position following an actual or simulated signal. This will encompass the containment sump isolation valves, which open on a SRAS. The frequency of test performance for the containment sump isolation valves will change from at least once per 31 days to at least once per 18 months. A review of the associated valves history has not indicated a failure rate that would warrant a 31 day frequency. This is a less restrictive change. However, the proposed frequency is consistent with other current Millstone Unit No. 2 automatic valve testing requirements (e.g., SR 4.6.3.1.2.a for containment isolation valves and SR 4.7.1.2.c for auxiliary feedwater valves) and with standard industry practices and guidelines.

   The wording has been modified to allow the use of an actual or simulated actuation signal, instead of just a simulated signal, to test this function. This will provide additional flexibility in test performance. It will not result in any technical change to how this protective feature functions.

The addition of SR 4.5.2.f will require all automatic ECCS valves, not locked sealed or otherwise secured in position, to be tested for actuation to the proper position at least once per 18 months. This is a more restrictive change since the number of valves tested will increase. The proposed frequency is consistent with other current Millstone Unit No. 2 automatic valve testing requirements (e.g., SR 4.6.3.1.2.a for containment isolation valves and SR 4.7.1.2.c for auxiliary feedwater valves) and with standard industry practices and guidelines.

The proposed SR 4.5.2.f will not require performance of the testing on a staggered test basis. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, it would not be appropriate to specify a staggered test basis since the proposed frequency will allow the testing to be performed during refueling outages. If the requirement to perform the testing on a staggered test basis was retained, it would be necessary to test half of the valves at a nine month frequency. This would not be consistent with performing the majority of 18 month surveillance testing when the plant is shut down during refueling outages.

9. SR 4.5.2.a.6 will be deleted. The requirement to cycle all automatically operated valves will be addressed by the IST Program, which covers safety related valves. The IST Program will determine which safety related valves need to be cycled, and at what frequency. The number of valves tested is expected to decrease as a result of this change because not all automatically operated valves are required to change position to mitigate design basis events or support safe shutdown conditions. Automatic valves that are not required to change position are classified as passive valves by the IST Program and are not required to be cycled. The IST Program determines the frequency of safety related valve testing based on the ability to test valves during plant operation. Valves testable at power will be tested every 92 days. Valves not capable of testing during plant operation will be tested at a cold shutdown or refueling interval frequency. This approach, to use the IST Program to control the cycling of valves, is consistent with standard industry practices and guidelines. The expected reduction in the number of valves tested and the frequency change are less restrictive changes.

10. The current requirements of SR 4.5.2.a.7 will be combined into the proposed SR 4.5.2.a. This proposed surveillance requirement will require verification that all ECCS valves in the flow path servicing safety related equipment that are not locked, sealed, or otherwise secured in position are in the correct position. This will encompass manual ECCS valves. Therefore, relocation of this requirement will not result in a reduction in the number of valves tested.

    Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires an ECCS subsystem to be tested every 15 days (31 days divided by number of subsystems). There is little or no benefit to specifying performance of SR 4.5.2.a on a staggered test basis (i.e., one subsystem every 15 days) since the position of the ECCS (both subsystems) valves is required to be verified every 31 days. Therefore, the frequency of individual valve position verification will remain at 31 days. This is consistent with standard industry practices and guidelines.

11. The current requirements of SR 4.5.2.a.8 will be combined into the proposed SR 4.5.2.a. This proposed surveillance requirement will require verification that all ECCS valves in the flow path servicing safety related equipment that are not locked, sealed, or otherwise secured in position are in the correct position. This will encompass remote or automatic ECCS valves. Therefore, relocation of this requirement is not expected to result in a reduction in the number of valves tested.

    Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires an ECCS subsystem to be tested every 15 days (31 days divided by number of subsystems). There is little or no benefit to specifying performance of SR 4.5.2.a on a staggered test basis (i.e., one subsystem every 15 days) since the position of the ECCS (both subsystems) valves is required to be verified every 31 days. Therefore, the frequency of individual valve position verification will remain at 31 days. This is consistent with standard industry practices and guidelines.

12. SR 4.5.2.a.9, which verifies each ECCS subsystem is aligned to receive power from a separate and operable emergency bus, will be deleted. This is redundant to the definition of operable (Definition 1.6) and can be removed without affecting any operability requirements. For a component to be operable, it must have its normal and emergency power supply, except as provided by Technical Specification 3.0.5. In addition, it is not necessary to specify separate emergency busses. The degree of separation and the level of independence between the ECCS subsystems and the associated emergency busses is a design feature of the ECCS and the emergency power distribution system. The Millstone Unit No. 2 FSAR describes the approved degree of separation and level of independence between ECCS subsystems and emergency busses. If the approved degree of separation and level of independence are not maintained, an evaluation will be necessary to determine ECCS subsystem operability. Therefore, it is not necessary to include a check that each ECCS subsystem is aligned to separate emergency busses. Since this surveillance requirement is redundant to the current definition of operable, its deletion will not result in a technical change.

13. The current requirements of SR 4.5.2.a.10 and the associated footnotes (* and **) will be combined into the proposed SR 4.5.2.b. This will not result in any technical change to the current requirements.

Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires an ECCS subsystem to be tested every 15 days (31 days divided by number of subsystems). There is little or no benefit to specifying performance of SR 4.5.2.b on a staggered test basis (i.e., one subsystem every 15 days) since the position of the ECCS (both subsystems) valves is required to be verified every 31 days. Therefore, the frequency of individual valve position verification will remain at 31 days. This is consistent with standard industry practices and guidelines.

14. SR 4.5.2.b will be relocated from Technical Specifications to the TRM. This surveillance requirement requires a visual inspection of containment to ensure no loose debris is present which could be transported to the containment sump, and cause restrictions of the pump suctions during a LOCA. This is a good housekeeping item, which is an integral part of any maintenance or surveillance activity. It does not verify operability of the ECCS or any ECCS functions assumed in the safety analysis. This approach is consistent with NUREG-1432, which does not contain a requirement to inspect the containment sump prior to establishing containment integrity. In addition, the containment sump will continue to be inspected every 18 months as required by SR 4.5.2.c.2 (proposed SR 4.5.2.j). This is a less restrictive change.

15. The current requirements of SR 4.5.2.c.1 will be relocated to proposed SR 4.5.2.k. The wording has been modified to allow the use of an actual or simulated pressure signal, instead of just a simulated signal, to test this feature. This will provide additional flexibility in test performance. However, this will not result in any technical change to how this protective feature functions, or to the frequency of test performance.

16. The current requirements of SR 4.5.2.c.2 will be relocated to proposed SR 4.5.2.j. The wording has been modified for consistency with the equivalent surveillance requirement in NUREG-1432 (SR 3.5.2.10). However, this will not result in any technical change to the current requirements.

17. The reference to SR 4.5.2.c.3 and 4.5.2.c.4, which were previously deleted, will be removed. This will not result in any technical change to the current requirements.

18. SR 4.5.2.c.5 will be deleted. The purpose of this surveillance requirement, in combination with SR 4.6.2.1.1.c, is to ensure that the leakage rates assumed from portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident (e.g., post LOCA recirculation phase) will not be exceeded. This is already addressed by Technical Specification 6.13, "Systems Integrity," which requires a program to be implemented "to reduce leakage from systems outside containment that would, or could, contain highly radioactive fluids during a serious transient, or accident,

to as low as practical levels." Millstone Unit No. 2 has implemented the program required by Technical Specification 6.13. This program, which is currently contained in the Millstone Unit No. 2 TRM, does address the HPSI System as currently specified in SR 4.5.2.c.5. This program is used to ensure that the leakage rates assumed in the determination of the radiological consequences of the design basis accidents are not exceeded. Therefore, the removal of SR 4.5.2.c.5, which is already addressed by Technical Specification 6.13 and the associated required program, will not result in any technical change to the current requirements.

19. SR 4.5.2.d will be deleted. The requirement to cycle power operated valves that are not testable at power will be addressed by the IST Program, which covers safety related valves. The IST Program will determine which safety related valves need to be cycled, and at what frequency. The number of valves tested is expected to decrease as a result of this change because not all power operated valves are required to change position to mitigate design basis events or support safe shutdown conditions. Power operated valves that are not required to change position are classified as passive valves by the IST Program and are not required to be cycled. The IST Program determines the frequency of safety related valve testing based on the ability to test valves during plant operation. Valves testable at power will be tested every 92 days. Valves not capable of testing during plant operation will be tested at a cold shutdown or refueling interval frequency. This approach, to use the IST Program to control the cycling of valves, is consistent with standard industry practices and guidelines. The expected reduction in the number of valves tested is a less restrictive change.

20. SR 4.5.2.e will be modified as follows.

    a. SR 4.5.2.e.1 will be retained as SR 4.5.2.i.1. This will not result in any technical change to the current requirement.

    b. SR 4.5.2.e.2 will be deleted. This requirement, which verifies correct position of the valve stops following valve maintenance, is not necessary. Post maintenance testing of these valves, which is controlled by plant procedures, will include verification of valve operation if the associated work could adversely affect valve operation. This verification is necessary prior to considering the valve operable after completion of maintenance activities that could affect valve operation. After valve operation is verified, the proposed requirements of SR 4.5.2.i.1 will apply, which will require verification of valve stops within 4 hours. This approach is consistent with NUREG-1432, which does not contain a requirement to verify the correct position of valve stops following maintenance activities. This is a less restrictive change.

    c. SR 4.5.2.e.3 will be retained as SR 4.5.2.i.2. This will not result in any technical change to the current requirement.

21. SR 4.5.2.f will be relocated from Technical Specifications to the TRM. This requirement, which verifies proper flow distribution following any modifications that could alter system flow characteristics, is not necessary. Post maintenance testing associated with a system modification, which is controlled by plant procedures, will include verification of proper flow distribution if the associated modification could adversely affect the flow distribution. Without this verification, the respective system could not be declared operable. This approach is consistent with NUREG-1432, which does not contain a requirement to verify proper system flow distribution after system modifications. This is a less restrictive change.

22. The current requirements of SR 4.5.2.g will be relocated to the TRM along with the requirements of Technical Specifications 3.1.2.2, 3.1.2.4, and 3.1.2.6. Since the revised Millstone Unit No. 2 LOCA analysis no longer credits charging pump flow for design basis accident mitigation, it is not necessary to include requirements for the actuation of the charging pumps, boric acid pumps and the associated boric acid valves following the generation of a SIAS. Refer to the Safety Summary contained in this attachment for a discussion of the criteria contained in 10 CFR 50.36c(2)(ii) for items that must be in Technical Specifications. This is a less restrictive change.

Technical Specification 3.5.3

1. The LCO for Technical Specification 3.5.3 will be modified by replacing the term ECCS with "high pressure safety injection," deleting the phrase "with each subsystem comprised of:," and the requirements contained in LCO items a. and b. will be relocated to the Bases for this specification. The resultant LCO will only require one HPSI subsystem to be operable. This will not result in any change to the current requirement which only requires the HPSI portion of one ECCS subsystem to be operable. The detail of what constitutes a HPSI subsystem will be contained in the Bases, which is an appropriate location for this additional information (NUREG-1432, Technical Specification 3.5.3).

   The changes identified above will require the addition of a period after "OPERABLE." This is a non-technical change.

2. The proposed changes to the LCO for Technical Specification 3.5.3 will result in the deletion of the references to the second (**), third (***), and fourth (****) footnotes. These footnotes will be retained by relocating the associated information to LCO Notes that will be added after the LCO, but before the applicability. The use of LCO Notes is consistent with NUREG-1432 (e.g., Technical Specification 3.4.5). This is a non-technical change.

3. The action time requirement to be in Cold Shutdown (Mode 5) if no ECCS subsystem is operable will be changed from 20 hours to 24 hours. Allowing 24 hours to reach Mode 5 from a higher mode is a standard time interval used in most Technical Specifications, including Technical Specification 3.0.3. This is a less restrictive change, and it is consistent with NUREG-1432 (Technical Specification 3.5.3).

4. SR 4.5.3.1 will be modified to identify the required surveillance tests. The specific surveillance requirements of Technical Specification 3.5.2 that have to be met for the ECCS (HPSI) subsystem to be considered operable will be added. In addition, only the applicable portions of the listed surveillance requirements are required since some of the referenced surveillance requirements include LPSI components not required by Technical Specification 3.5.3. This will not change the number or scope of the surveillance requirements for this specification. The surveillance requirements specified are based on the proposed changes to Technical Specification 3.5.2 already discussed. This is consistent with NUREG-1432 (Technical Specification 3.5.3).

Technical Specification 3.6.2.1

1. The required plant condition (Required Action a.1) if an inoperable CS train is not restored to operable status will be changed. The phrase "HOT SHUTDOWN within the next 12 hours" will be replaced by the phrase "HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours." The current requirement to be in Hot Shutdown is not consistent with the applicability of this specification with respect to the CS System (Mode 3 with pressurizer pressure $\geq$ 1750 psia). The proposed change will make the action requirement consistent with the applicability. The shutdown time will be divided into two 6 hour blocks, but the total shutdown time of 12 hours will not change. The structure of the proposed shutdown statement is consistent with Technical Specification 3.5.1. This will not result in any technical change since this is consistent with the current applicability of this specification and the total shutdown time will remain at 12 hours.

2. The current requirements of SRs 4.6.2.1.1.a.1, 4.6.2.1.1.a.2, and 4.6.2.1.1.a.3 will be combined into the proposed SR 4.6.2.1.1.b. This will result in the following changes to the current requirements.

    a. The proposed frequency of "when tested pursuant to Specification 4.0.5" will result in an initial change in test frequency from 31 days to 92 days. The IST Program specifies a minimum test performance interval of 92 days, which may become more frequent based on equipment performance. The frequency change, although less restrictive, is consistent with standard industry practices and guidelines.

Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires CS train components to be tested every 15 days (31 days divided by number of trains). With the proposed change to use Technical Specification 4.0.5 to control test frequency, each CS pump will be tested every 92 days. This would require one pump to be tested every 46 days if the requirement to test on a staggered test basis were retained. There is little or no benefit to specifying performance of SR 4.6.2.1.1.b on a staggered test basis since each pump will be tested every 92 days. There would be no change in the surveillance frequency specified by the IST Program by performing this on a staggered test basis. This is consistent with standard industry practices and guidelines.

b. SR 4.6.2.1.1.a.1 will be deleted. It is not necessary to specify that the CS pumps be started from the control room since this is where the CS pumps are normally operated. Removal of this requirement will not adversely impact test performance.

c. The pump acceptance criteria contained in SR 4.6.2.1.1.a.2 will not be retained in the proposed SR 4.6.2.1.b. The pump acceptance criteria specified by design basis requirements is verified by the IST Program, which is referenced (Specification 4.0.5) in the proposed SR 4.6.2.1.b. It is not necessary to specify the acceptance criteria in the surveillance requirement. The IST Program provides sufficient control of this value to ensure the associated pumps will perform as assumed in the accident analysis. Removal of this specific value will not adversely impact test performance. This approach, to allow the IST Program to specify the acceptance criteria, based on design basis requirements, is consistent with standard industry practices and guidelines (NUREG-1432, SR 3.6.6A.5, TSTF-78).

d. SR 4.6.2.1.1.a.3 will be deleted. It is not necessary to specify how long the CS pumps need to operate. The IST Program will provide sufficient guidance to ensure the CS pumps are operated a sufficient time to provide reliable test results. Removal of this requirement will not adversely impact test performance.

3. SR 4.6.2.1.1.a.4 will be deleted. The requirement to cycle the testable automatically operated valves will be addressed by the IST Program, which covers safety related valves. The IST Program will determine which safety related valves need to be cycled, and at what frequency. The number of valves tested is expected to decrease as a result of this change because not all automatically operated valves are required to change position to mitigate design basis events or support safe shutdown conditions. Automatic valves that are not required to change position are classified as passive valves by the IST Program

and are not required to be cycled. The IST Program determines the frequency of safety related valve testing based on the ability to test valves during plant operation. Valves testable at power will be tested every 92 days. Valves not capable of testing during plant operation will be tested at a cold shutdown or refueling interval frequency. This approach, to use the IST Program to control the cycling of valves, is consistent with standard industry practices and guidelines. The expected reduction in the number of valves tested and the frequency change are less restrictive changes.

4. The current requirements of SR 4.6.2.1.1.a.5 will be relocated to the proposed SR 4.6.2.1.1.c. This SR will require verification that all automatic valves associated with the CS System that are not locked, sealed, or otherwise secured in position actuate to the correct position following an actual or simulated signal. This will encompass the containment sump isolation valves, which open on a SRAS. The frequency of test performance for the containment sump isolation valves will change from at least once per 31 days to at least once per 18 months. A review of the associated valves history has not indicated a failure rate that would warrant a 31 day frequency. The proposed frequency is consistent with other current Millstone Unit No. 2 automatic valve testing requirements (e.g., SR 4.6.3.1.2.a for containment isolation valves and SR 4.7.1.2.c for auxiliary feedwater valves) and NUREG-1432. This is a less restrictive change.

   The wording has been modified to allow the use of an actual or simulated actuation signal, instead of just a simulated signal, to test this function. This will provide additional flexibility in test performance. It will not result in any technical change to how this protective feature functions.

   The current requirement includes verification that a flow path through an operable shutdown cooling heat exchanger has been established. This will not be included in the proposed SR 4.6.2.1.1.c. It is not necessary to include flow path verification when checking that the automatic valves position properly following receipt of an actual or simulated signal. The proper positions of all other valves in the flow path are verified every 31 days by proposed SR 4.6.2.1.1.a. Therefore, if the automatic valves correctly reposition, a flow path should be established.

   The proposed SR 4.6.2.1.1.c will not require performance of the testing on a staggered test basis. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, it would not be appropriate to specify a staggered test basis since the proposed frequency will allow the testing to be performed during refueling outages. If the requirement to perform the testing on a staggered test basis was retained, it would be necessary to test half of the valves at a nine month frequency. This would not be consistent with performing the majority of 18 month surveillance testing when the plant is shut down during refueling outages.

5. The current requirements of SR 4.6.2.1.1.a.6 will be relocated to proposed SR 4.6.2.1.1.a. This SR will require verification that all containment spray valves in the spray train flow path that are not locked, sealed, or otherwise secured in position are in the correct position. This will encompass manual, remote, and automatically operated containment spray valves. In addition, the reference to "accessible" manual valves is not necessary and will not be retained. Relocation of this requirement will not result in a reduction in the number of valves tested.

   Performance of the surveillance on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires a CS train to be tested every 15 days (31 days divided by number of trains). There is little or no benefit to specifying performance of SR 4.6.2.1.1.a on a staggered test basis (i.e., one subsystem every 15 days) since the position of the CS System (both trains) valves is required to be verified every 31 days. Therefore, the frequency of individual valve position verification will remain at 31 days. This is consistent with standard industry practices and guidelines.

6. SR 4.6.2.1.1.b will be deleted. The requirement to cycle the automatically operated valves not testable during plant operation will be addressed by the IST Program, which covers safety related valves. The IST Program will determine which safety related valves need to be cycled, and at what frequency. The number of valves tested is expected to decrease as a result of this change because not all automatically operated valves are required to change position to mitigate design basis events or support safe shutdown conditions. Automatic valves that are not required to change position are classified as passive valves by the IST Program and are not required to be cycled. The IST Program determines the frequency of safety related valve testing based on the ability to test valves during plant operation. Valves testable at power will be tested every 92 days. Valves not capable of testing during plant operation will be tested at a cold shutdown or refueling interval frequency. This approach, to use the IST Program to control the cycling of valves, is consistent with standard industry practices and guidelines. The expected reduction in the number of valves tested is a less restrictive change.

7. SR 4.6.2.1.1.c will be deleted. The purpose of this surveillance requirement, in combination with SR 4.5.2.c.5, is to ensure that the leakage rates assumed from portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident (e.g., post LOCA recirculation phase) will not be exceeded. This is already addressed by Technical Specification 6.13, "Systems Integrity," which requires a program to be implemented "to reduce leakage from systems outside that would, or could, contain highly radioactive fluids during a serious transient, or accident, to as low as practical levels." Millstone Unit No. 2 has implemented the program required by Technical Specification 6.13. This program, which is currently contained in the Millstone

Unit No. 2 TRM, does address the CS System as currently specified in SR 4.6.2.1.1.c. This program is used to ensure that the leakage rates assumed in the determination of the radiological consequences of the design basis accidents are not exceeded. Therefore, the removal of SR 4.6.2.1.1.c, which is already addressed by Technical Specification 6.13 and the associated required program, will not result in any technical change to the current requirements.

8. The current requirement of SR 4.6.2.1.1.d to verify each spray nozzle will be relocated to proposed SR 4.6.2.1.1.e. It will not change. However, the detail on how this is performed (i.e., air or smoke flow test) will not be retained. Specific test details like this do not need to be contained in the surveillance requirement. In addition, the frequency of test performance will be changed from at least once per 5 years to at least once per 10 years. Since the associated piping and nozzles are stainless steel, a 10 year surveillance frequency is consistent with the recommendations of Generic Letter 93-05.[7] In addition, the proposed surveillance requirement is consistent with NUREG-1432 (Technical Specification 3.6.6.A).

9. A new surveillance requirement, SR 4.6.2.1.1.d, will be added. This surveillance requirement will verify each CS pump starts automatically on an actual or simulated actuation signal. The 18 month frequency is consistent with similar surveillance requirements such as SR 4.7.1.2.c for the AFW pumps. This is a more restrictive change. In addition, the proposed surveillance requirement is consistent with NUREG-1432 (SR 3.6.6A.7).

10. The current requirements of SR 4.6.2.1.2 will be modified as follows.

    a. SR 4.6.2.1.2.a will be deleted. It is not necessary to specify that the containment air recirculation and cooling units be started from the control room since this is where the units are normally operated. The requirement to operate in low speed will be retained in the proposed SR 4.6.2.1.2.a and the term low speed will be changed to the equivalent term slow speed. Removal of this requirement and the terminology change will not adversely impact test performance.

    b. The requirements of SR 4.6.2.1.2.b will be relocated to proposed SR 4.6.2.1.2.a. This will not result in any change in test performance.

    c. The requirements of SR 4.6.2.1.2.c will be relocated to proposed SR 4.6.2.1.2.b. This will not result in any change in test performance.

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[7] Generic Letter 93-05, "Line-Item Technical Specifications Improvements To Reduce Surveillance Requirements For Testing During Power Operation," dated September 27, 1993.

d. The frequency of test performance will remain at 31 days. However, performance of the proposed surveillances on a staggered test basis will not be required. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, the current frequency of every 31 days on a staggered test basis requires a containment cooling train (two containment air recirculation and cooling units) to be tested every 15 days (31 days divided by number of trains). With the proposed change, each containment air recirculation and cooling unit will be tested every 31 days. There is little or no benefit to specifying performance of SR 4.6.2.1.2.a and SR 4.6.2.1.2.b on a staggered test basis since each cooling unit will be tested every 31 days. This is consistent with standard industry practices and guidelines.

11. A new surveillance requirement, SR 4.6.2.1.2.c, will be added. This surveillance requirement will verify each containment air recirculation and cooling unit starts automatically on an actual or simulated actuation signal. This test will be performed at least once per 18 months. The 18 month frequency is consistent with similar surveillance requirements such as SR 4.7.1.2.c for the AFW pumps. This is a more restrictive change. In addition, the proposed surveillance requirement is consistent with NUREG-1432 (SR 3.6.6A.8).

Technical Specification 3.7.1.2

1. The current requirements of SRs 4.7.1.2.a.1, 4.7.1.2.a.2.a, 4.7.1.2.a.2.b, and 4.7.1.2.a.3 will be combined into the proposed SR 4.7.1.2.b. This will result in the following changes to the current requirements.

   a. The proposed frequency of "when tested pursuant to Specification 4.0.5" will result in an initial change in test frequency from 31 days to 92 days. The IST Program specifies a minimum test performance interval of 92 days, which may become more frequent based on equipment performance. The frequency change, although less restrictive, is consistent with standard industry practices and guidelines (NUREG-1432, SR 3.7.5.2, TSTF-101).

   b. SR 4.7.1.2.a.1 will be deleted. It is not necessary to specify that the AFW pumps be started from the control room since this is where the AFW pumps are normally operated. Removal of this requirement will not adversely impact test performance.

   c. The pump acceptance criteria contained in SRs 4.7.1.2.a.2.a and 4.7.1.2.a.2.b will not be retained in the proposed SR 4.7.1.2.b. The pump acceptance criteria specified by design basis requirements is verified by the IST Program, which is referenced (Specification 4.0.5) in the proposed SR 4.7.1.2.b. It is not necessary to specify the acceptance criteria in the surveillance requirement. The IST Program provides sufficient control of this value to ensure the associated pumps will perform as assumed in the accident analysis. Removal of this specific value will not adversely impact test performance. This approach, to allow the IST Program to specify the acceptance criteria, based on design basis requirements, is consistent with standard industry practices and guidelines (NUREG-1432, SR 3.7.5.2).

d. The addition of the statement to the proposed SR 4.7.1.2.b that the test does not have to be performed for the steam turbine driven AFW pump until 24 hours after reaching 800 psig in the steam generators will provide additional guidance to the plant operators. The use of a 24 hour time limit is consistent with the guidance contained in Generic Letter (GL) 87-09.[8] This approach, to address the performance of surveillance requirements that cannot be performed until certain plant conditions are established, is consistent with NUREG-1432 (SR 3.7.5.2).

e. SR 4.7.1.2.a.3 will be deleted. It is not necessary to specify how long the AFW pumps need to operate. The IST Program will provide sufficient guidance to ensure the AFW pumps are operated a sufficient time to provide reliable test results. Removal of this requirement will not adversely impact test performance.

2. SR 4.7.1.2.a.4 will be deleted. The requirement to cycle the testable remote operated valves can be addressed by the IST Program, which covers safety related valves. The IST Program will determine which safety related valves need to be cycled, and at what frequency. The number of valves tested is expected to decrease as a result of this change because not all remote operated valves are required to change position to mitigate design basis events or support safe shutdown conditions. Remote operated valves that are not required to change position are classified as passive valves by the IST Program and are not required to be cycled. The IST Program determines the frequency of safety related valve testing based on the ability to test valves during plant operation. Valves testable at power will be tested every 92 days. Valves not capable of testing during plant operation will be tested at a cold shutdown or refueling interval frequency. This approach, to use the IST Program to control the cycling of valves, is consistent with standard industry practices and guidelines. The expected reduction in the number of valves tested and the frequency change are less restrictive changes.

3. The current requirements of SRs 4.7.1.2.a.5 and 4.7.1.2.a.6 will be relocated to the proposed SR 4.7.1.2.a. This SR will require verification that all AFW valves in each water flow path and each steam flow path that are not locked, sealed, or otherwise secured in position are in the correct position. This will encompass

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(8) Generic Letter 87-09, "Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the Applicability of Limiting Conditions for Operation and Surveillance Requirements," dated June 4, 1987.

manual, remote operated, and automatic AFW valves. Therefore, relocation of these requirements will not adversely impact test performance.

4. The current requirements of SR 4.7.1.2.b will be relocated to the proposed SR 4.7.1.2.e. The requirement to verify proper alignment of the AFW flow paths by verifying flow from the condensate storage tank to the steam generators after a shutdown of significant duration will not change. It will be clarified by replacing "Cold Shutdown" with Mode 5, Mode 6, and defueled. A cumulative time period of greater than 30 days will be specified instead of the current time period of at least 30 days (a less restrictive, but not significant change in duration). In addition, the flow test will be required before entering Mode 2, instead of the current before entering Mode 3. This will ensure AFW capability is verified after an extended shutdown before the reactor is taken critical, which can result in a significant increase in heat removal requirements. The proposed changes should result in a reduction in the number of starts of the steam turbine driven AFW pump since this test will not be required until after sufficient steam pressure has developed which will allow performance of the steam turbine driven AFW pump flow test at the same time. The less restrictive operating mode and shutdown duration changes will not adversely affect test performance. This is consistent with NUREG-1432, SR 3.7.5.5, TSTF-268.

5. The current requirements of SR 4.7.1.2.c.1 will be relocated to the proposed SR 4.7.1.2.c. This surveillance requirement will require verification that all automatic valves associated with the AFW System actuate to the correct position following an actual or simulated signal. The phrase "as designed" has been included to address the current system design which does not include an automatic start feature associated with the steam turbine driven AFW pump. This will not result in any change in test performance.

   The wording has been modified to allow the use of an actual or simulated actuation signal, instead of just a simulated signal, to test this function. This will provide additional flexibility in test performance. However, this will not result in any technical change to how this protective feature functions, or to the frequency of test performance.

6. The current requirements of SR 4.7.1.2.c.2 will be relocated to the proposed SR 4.7.1.2.d. This surveillance requirement will require verification that each AFW pump starts automatically on an actual or simulated signal. The phrase "as designed" has been included to address the current system design which does not include an automatic start feature associated with the steam turbine driven AFW pump. This will not result in any change in test performance.

   The wording has been modified to allow the use of an actual or simulated actuation signal, instead of just a simulated signal, to test this function. This will provide additional flexibility in test performance. However, this will not result in any technical change to how this protective feature functions, or to the frequency of test performance.

Technical Specification Bases

The Bases for these Technical Specifications will be expanded to include technical information that was originally contained in the LCOs, describe the associated surveillance requirements and to include technical information that was not included in the proposed surveillance requirements. This approach, to include additional information that describes LCO and surveillance requirements in the associated Bases, is consistent with NUREG-1432.

The current Bases for the Technical Specifications affected by the proposed changes contain descriptions of the pump surveillance requirements. These descriptions discuss how instrument uncertainty is applied to the pump acceptance criteria values currently contained in the surveillance requirements. Since the proposed changes will remove the pump acceptance criteria values from the surveillance requirements, it is no longer necessary to include a discussion of instrument uncertainty in the associated Bases. This information will be removed from the associated Bases. The IST Program will control the instrument uncertainty information. The pump acceptance criteria values specified by design basis requirements will be verified by the IST Program.

Safety Summary

The proposed changes will relocate the BS Technical Specification requirements to the TRM, relocate boron dilution requirements within Technical Specifications, and revise the Technical Specification LCO, action, and surveillance requirements associated with the Emergency Core Cooling, Containment Spray and Cooling, and Auxiliary Feedwater Systems. An evaluation of the safety implications of the proposed changes is presented below.

Relocation of Boration System Requirements

10 CFR 50.36c(2)(ii) contains criteria that can be used to determine the requirements that must be included in the Technical Specifications. Items not meeting the criteria can be relocated from Technical Specifications to a Licensee controlled document. The Licensee can then change the relocated requirements, if necessary, in accordance with 10 CFR 50.59. This will result in significant reductions in time and expense to modify requirements that have been relocated while not adversely affecting plant safety. It is planned during the relocation of these specifications to the TRM to include changes for consistency with the other proposed Technical Specification changes (e.g., transfer of charging pump boron dilution requirements and changes to surveillance requirements) contained in this submittal. These additional changes will be evaluated in accordance with 10 CFR 50.59.

Technical Specifications 3.1.2.1 through 3.1.2.8 address reactivity control by the BS. The BS is used to control the boron concentration in the RCS to maintain shutdown margin (SDM) as required by Technical Specifications 3.1.1.1, "Reactivity Control Systems - Shutdown Margin - Tavg > 200°F;" 3.1.1.2, "Reactivity Control Systems - Shutdown Margin - Tavg ≤ 200°F;" and 3.9.1, "Refueling Operations - Boron Concentrations." The SDM requirements provide sufficient reactivity margin to ensure that acceptable fuel design limits will not be exceeded for normal shutdown and anticipated operational occurrences. The SDM defines the degree of subcriticality that would be obtained immediately following the insertion of all shutdown and control rods, assuming that the single rod assembly of highest worth is fully withdrawn. During power operation, SDM control is ensured by operating with the shutdown banks fully withdrawn, Technical Specification 3.1.3.5, "Reactivity Control Systems - Shutdown CEA Insertion Limit," and the control banks within the limits of Technical Specification 3.1.3.6, "Reactivity Control Systems - Regulating CEA Insertion Limits." When the plant is in the shutdown and refueling modes, the SDM requirements are met by adjusting RCS boron concentration.

In addition to controlling the boron concentration in the RCS, the BS also supports operation of the charging pumps in response to design basis accidents and transients. This function is currently addressed by Technical Specification 3.5.2, "Emergency Core Cooling Systems – ECCS Subsystems – Tavg Greater Than or Equal to 300°F." Technical Specification 3.5.2 covers the BS components (e.g., charging pumps, boric acid pumps, and boric acid valves) that actuate automatically on a safety injection actuation signal.

Operation of the BS is no longer credited for mitigation of any design basis accident (DBA) or transient. The revised Millstone Unit No. 2 LOCA analysis no longer credits charging pump flow for accident mitigation, and the boron dilution analysis does not credit operation of the BS. It is assumed that the required SDM has been established prior to the start of a boron dilution event. This is a valid assumption since the Technical Specification SDM requirements are required to be met prior to entering the Mode of Applicability where the event is assumed to occur. If a boron dilution event occurs in Modes 1 or 2, reactor protection is provided by the Technical Specification SDM requirements (Technical Specification 3.1.1.1), numerous automatic reactor trips, administrative procedures, and sufficient time for the operator to take the appropriate action (isolation of the dilution source) prior to reaching the SDM limit. If a boron dilution event occurs in Modes 3 through 6, reactor protection is provided by the Technical Specification SDM requirements (Technical Specifications 3.1.1.1, 3.1.1.2, and 3.9.1), administrative procedures, and sufficient time for the operator to take the appropriate action (isolation of the dilution source) prior to reaching the SDM limit. (These events are discussed in Millstone Unit No. 2 FSAR Section 14.4.6, "Chemical and Volume Control System Malfunction that Results in a Decrease in the Boron Concentration in the Reactor Coolant.")

Since operation of the BS is not credited for mitigation of any DBA or transient, the associated Technical Specifications can be relocated from Technical Specifications provided the 10 CFR 50.36(c)(2)(ii) criteria are not met. An evaluation of each criterion follows this brief summary of each of the Technical Specification requirements to be evaluated.

Technical Specifications 3.1.2.1 and 3.1.2.2 address BS flowpath requirements to ensure a flow path is available for negative reactivity control. Technical Specification 3.1.2.1 is applicable in Modes 5 and 6. Technical Specification 3.1.2.2 is applicable in Modes 1, 2, 3, and 4. A BS flowpath provides a means to supply borated water to the RCS to adjust RCS boron concentration to maintain SDM.

Technical Specifications 3.1.2.3 and 3.1.2.4 address charging pump requirements to ensure the charging pumps are available for negative reactivity control. Technical Specification 3.1.2.3 is applicable in Modes 5 and 6. Technical Specification 3.1.2.4 is applicable in Modes 1, 2, 3, and 4. The charging pumps provide the motive force to supply borated water to adjust RCS boron concentration to maintain SDM.

Technical Specifications 3.1.2.5 and 3.1.2.6 address boric acid pumps to ensure a borated water source is available for negative reactivity control. Technical Specification 3.1.2.5 is applicable in Modes 5 and 6. Technical Specification 3.1.2.6 is applicable in Modes 1, 2, 3, and 4. The boric acid pumps provide the motive force to supply boric acid to the charging pumps for borated water addition to adjust RCS boron concentration to maintain SDM.

Technical Specifications 3.1.2.7 and 3.1.2.8 address BS borated water sources to ensure a water source is available for negative reactivity control. Technical Specification 3.1.2.7 is applicable in Modes 5 and 6. Technical Specification 3.1.2.8 is applicable in Modes 1, 2, 3, and 4. The BS water sources provide the fluid source for borated water addition to adjust RCS boron concentration to maintain SDM.

Technical Specification 3.5.2 addresses the ECCS, which currently includes the HPSI pumps, LPSI pumps, charging pumps, boric acid pumps, and the associated flow paths and valves that are required for operation of this system for design basis accident mitigation. Technical Specification 3.5.2 is applicable in Modes 1, 2, and 3* ($\geq$ 1750 psia).

Criterion 1 Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

This criterion addresses instrumentation installed to detect excessive RCS leakage. Technical Specifications 3.1.2.1 through 3.1.2.8, which ensure the BS is available for reactivity control, and 3.5.2, which ensures the ECCS is available for DBA mitigation, do not cover installed instrumentation that is used to detect, and indicate in the control room, a significant degradation of the reactor coolant pressure boundary. The BS components (e.g., charging pumps, boric acid pumps, boric acid valves, and the boric acid storage tanks) addressed by Technical Specifications 3.1.2.1 through 3.1.2.8, and 3.5.2 do not satisfy Criterion 1.

Criterion 2 A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The purpose of this criterion is to capture those process variables that have initial values assumed in the design basis accident and transient analyses, and which are monitored and controlled during power operation. This criterion also includes active design features (e.g., high pressure/low pressure system valves and interlocks) and operating restrictions (pressure/temperature limits) needed to preclude unanalyzed accidents and transients.

The BS is used to establish and maintain SDM. The accident analyses assume the plant is at a specific SDM at the start of an accident. The validity of this assumption is established by the Technical Specifications that address SDM (Technical Specifications 3.1.1.1, 3.1.1.2, and 3.9.1). This ensures the required SDM will be established prior to entering plant conditions (i.e., operating Mode) where the accidents are of concern. Operation of the BS components is no longer credited in the revised Millstone Unit No. 2 LOCA analysis, and was not previously credited in any other Millstone Unit No. 2 DBA analysis that relies on the ECCS for accident mitigation. The boron dilution analysis assumption of no more than two charging pumps capable of injecting into the RCS when less than 300 °F will be relocated from Technical Specifications 3.1.2.3 and 3.1.2.4 to Technical Specification 3.1.1.3. Therefore, the BS components addressed by Technical Specifications 3.1.2.1 through 3.1.2.8, and 3.5.2 do not include a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The BS requirements addressed by Technical Specifications 3.1.2.1 through 3.1.2.8, and 3.5.2 do not satisfy Criterion 2.

Criterion 3 A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The purpose of this criterion is to capture only those structures, systems, and components that are part of the primary success path of the safety analysis (an examination of the actions required to mitigate the consequences of the design basis accidents and transients). The primary success path of a safety analysis consists of the combinations and sequences of equipment needed to operate, so that the plant response to the design basis accidents and transients limits the consequences of these events to within the appropriate acceptance criteria. Also captured by this criterion are those support and actuation systems that are necessary for items in the primary success path to successfully function. It does not include backup and diverse equipment.

The BS is used to establish and maintain SDM. The accident analyses assume the plant is at a specific SDM at the start of an accident to provide sufficient time for the plant operators to recognize the event and terminate the event prior to a complete loss of SDM. Providing sufficient time to isolate the dilution source prior to a complete loss of SDM is the primary success path for mitigation of this event. The validity of this assumption is established by the Technical Specifications that address SDM. This ensures the required SDM will be established prior to entering plant conditions where the accidents are of concern. The subsequent use of the BS to regain the required SDM is beyond the scope of a primary success path action. In addition, operation of the BS components is no longer credited in the revised Millstone Unit No. 2 LOCA analysis, and was not previously credited in any other Millstone Unit No. 2 DBA analysis that relies on the ECCS for accident mitigation. As a result, the BS requirements addressed by Technical Specifications 3.1.2.1 through 3.1.2.8 and 3.5.2 do not include a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The BS requirements of Technical Specifications 3.1.2.1 through 3.1.2.8, and 3.5.2 do not satisfy Criterion 3.

Criterion 4 A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The purpose of this criterion is to capture only those structures, systems, and components that operating experience or probabilistic risk assessment has shown to be significant to public health and safety. Requirements proposed for relocation do not contain constraints of prime importance in limiting the likelihood or severity of the accident sequences that are commonly found to dominate risk.

The BS components addressed by Technical Specifications 3.1.2.1 through 3.1.2.8, and 3.5.2 only include one structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to the public health and safety. The charging pumps are risk significant equipment due to their role in the mitigation of two beyond design basis events. These plant operating Mode 1 events, Anticipated Transient Without Scram and Complete Loss of Secondary Heat Sink, rely on the charging pumps to provide flow to the RCS. Requirements for charging pump operability to ensure the capability to provide flow to the RCS (from the RWST) will be retained in Technical Specification 3.5.2. However, the other BS components addressed by Technical Specifications 3.1.2.1 through 3.1.2.8 and 3.5.2 do not meet Criterion 4.

The BS requirements contained in Technical Specifications 3.1.2.1 through 3.1.2.8, and 3.5.2, except the restriction on the number of charging pumps capable of injecting into the RCS below 300 °F and the charging pump capability to provide flow to the RCS from the RWST, do not meet any of the 10 CFR 50.36c(2)(ii) criterion for items that must be in Technical Specifications. Therefore, relocating these requirements from the Millstone Unit No. 2 Technical Specifications to a Licensee controlled document is safe, and will not adversely affected public health and safety.

LCO and Action Requirement Changes

Technical Specification 3.1.1.3 will be modified by adding the restriction that limits the number of charging pumps capable of injecting into the RCS to a maximum of two when less than 300°F. This restriction is currently contained in Technical Specifications 3.1.2.3 and 3.1.2.4, which have been proposed for relocation to the TRM. The addition of the boron dilution analysis restriction will require changes to the LCO, action, and surveillance requirements. However, there will be no technical change to this restriction.

Removal of the phrase "separate and independent" from the LCO for Technical Specification 3.5.2 will not change the requirement to have two operable trains. The degree of separation and the level of independence of the ECCS is a design feature. The Millstone Unit No. 2 FSAR describes the approved degree of separation and level of independence between ECCS subsystems. If the approved degree of separation and level of independence are not maintained, an evaluation will be necessary to determine ECCS subsystem operability. Therefore, it is not necessary to include a requirement to be separate and independent in Technical Specifications.

The proposed changes to relocate the detailed information currently contained in the LCOs of Technical Specifications 3.5.2 and 3.5.3 to the respective Bases will not result in any change to the ECCS requirements. The Bases is an appropriate location for this additional information (NUREG-1432, Technical Specification 3.5.2) and any subsequent changes to this information will be evaluated under 10 CFR 50.59. (The removal of the BS requirements from Technical Specification 3.5.2 and the retention of the charging pump capability to provide flow to the RCS was previously addressed in the 10 CFR 50.36(c)(2)(ii) criteria evaluation.)

The proposed changes to replace the term ECCS with "high pressure safety injection" in the LCO, action, and surveillance requirements for Technical Specification 3.5.3 will not result in any change to the current requirement which only requires the HPSI portion of one ECCS subsystem to be operable.

The proposed change to relocate the footnotes for Technical Specification 3.5.3 to LCO Notes will not result in any technical changes to the current requirements. The footnotes/LCO Notes will continue to be associated with the LCO requirements.

The proposed changes in the AOT from 48 hours to 72 hours (Technical Specification 3.5.2) and 20 to 24 hours (Technical Specification 3.5.3) are consistent with generic industry standards (NUREG-0212, Technical Specification 3.5.2 and NUREG-1432, Technical Specification 3.5.3). As specified in Regulatory Guide (RG) 1.177,[9] Licensee initiated Technical Specification changes (surveillance frequencies and allowed outage times) that are consistent with currently approved staff positions (e.g., NUREG-1432) do not require the submittal of risk information in support of the proposed changes. DNC has performed a qualitative evaluation of the proposed changes and determined these less restrictive changes will not adversely impact plant safety.

The proposed change in the required plant condition (Technical Specification 3.5.2, Action a.) if an inoperable ECCS subsystem is not restored to operable status will make the action requirement consistent with the applicability of this specification (Mode 3 with pressurizer pressure $\geq$ 1750 psia). This will not result in any technical change since this is consistent with the current applicability of this specification and the total shutdown time will remain at 12 hours.

The proposed change in the required plant condition (Technical Specification 3.6.2.1 Required Action a.1) if an inoperable CS train is not restored to operable status will make the action requirement consistent with the applicability of this specification for the CS System (Mode 3 with pressurizer pressure $\geq$ 1750 psia). This will not result in any technical change since this is consistent with the current applicability of this specification and the total shutdown time will remain at 12 hours.

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[9] Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998.

Surveillance Requirement Changes

The proposed changes will remove redundant testing requirements that are already addressed by the IST Program, which is required pursuant to Technical Specification 4.0.5. The proposed changes will also replace the acceptance criteria and frequency requirements of some surveillance requirements with a reference to Technical Specification 4.0.5 (IST Program).

The IST Program addresses safety related components that are used to shut down the reactor to the safe shutdown condition (hot shutdown for Millstone Unit No. 2), maintain the safe shutdown condition, and mitigate the consequences of the design basis accidents. In addition, the IST Program has been expanded to include components required to bring the reactor to a cold shutdown condition, maintain the reactor at cold shutdown, and provide long term post accident core cooling. Any changes to these requirements will be evaluated in accordance with 10 CFR 50.55a(f).

The IST Program (Technical Specification 4.0.5) will specify the component acceptance criteria and determine the frequency of test performance. The acceptance criteria (e.g., valve stroke time, pump developed head, pump flowrate) is based on the component operation assumed in the associated accident analysis. The IST Program provides sufficient control of the acceptance criteria to ensure the associated components will perform as assumed in the accident analysis. The frequency of test performance will change from monthly to quarterly for numerous components, unless equipment performance indicates more frequent testing is required. In addition, the IST Program will be used to control test performance (e.g., how long the pumps are required to operate). This approach, to allow the IST Program to specify the acceptance criteria (based on design basis requirements), determine the test frequency, and control the testing process is consistent with standard industry practices and guidelines. This is illustrated in NUREG-1432 where many of the surveillance requirements use the IST Program to control the acceptance criteria and frequency of test performance.

The requirement to perform various pump and valve testing on a staggered test basis will not be retained. Based on the definition of staggered test basis in the Millstone Unit No. 2 Technical Specifications, there is little or no benefit to specifying performance on a staggered test basis. Removal of this requirement will not result in any additional changes in testing frequency other than those changes already identified (i.e., monthly to quarterly). Elimination of testing on a staggered test basis for these components is consistent with standard industry practices and guidelines. (SRs 4.5.2.a, 4.6.2.1.1.a, and 4.6.2.1.2)

The proposed changes to the surveillance requirements that address 31 day or 18 month surveillance intervals for cycling system valves will result in a reduction in the number of valves tested. The reduction in valve population is the result of using the IST Program. This program only addresses safety related components, while the current requirements specify all system valves. As a result, not all valves will be tested on a regular basis. This is acceptable because the IST Program includes the valves required to change position for accident mitigation and safe shutdown of the unit. The valves excluded do not perform any safety related function or are not required to change position to perform a safety function. The IST Program will establish a quarterly frequency for testable valves and a cold shutdown or refueling interval (18 month) for valves not testable at power. The change in frequency is acceptable because it is consistent with current industry standards that are based on engineering judgment and operating experience, which have demonstrated no adverse impact on plant safety. The IST Program will monitor future component operation to determine if a more frequent surveillance interval is necessary. This is a less restrictive change. (SRs 4.5.2.a.6, 4.5.2.d, 4.6.2.1.1.a.4, 4.6.2.1.1.b, and 4.7.1.2.a.4)

The requirement to verify manual valve position every 31 days will be retained and it will be expanded to include power operated and automatic valves, where appropriate. The proposed expansion is a more restrictive change. (SR 4.5.2.a.7, 4.5.2.a.8, 4.6.2.1.1.a.6, 4.7.1.2.a.5, and 4.7.1.2.a.6)

The proposed changes to the SRs that address monthly testing of system pumps will result in a change in the surveillance interval from monthly to quarterly for the pumps, unless equipment performance indicates more frequent testing is required. It will not result in a reduction in the pump population tested. The less restrictive change in frequency is acceptable because it is consistent with current industry standards that are based on engineering judgment and operating experience, which have demonstrated no adverse impact on plant safety. (SRs 4.5.2.a.1, 4.5.2.a.2, 4.5.2.a.3, 4.6.2.1.1.a, and 4.7.1.2.a)

The requirement for the pumps to be started by a test signal (Technical Specification 3.5.2) will be changed to require verification the pumps start automatically on an actual or simulated actuation signal. This change is consistent with generic industry requirements (NUREG-1432) and will not adversely affect test performance. The frequency will be changed from 31 days to 18 months. Pump operation will be verified quarterly per the IST Program, but the automatic start function will only be verified every 18 months. The less restrictive change in frequency is acceptable because it is consistent with current industry standards that are based on engineering judgment and operating experience, which have demonstrated no adverse impact on plant safety. Verification of the automatic start function of the HPSI pumps, LPSI pumps, CS pumps, and the containment air recirculation and cooling units will be added.

The addition of the requirement to verify the automatic stop function of the LPSI pumps for containment sump recirculation is a more restrictive change. It is consistent with generic industry requirements (NUREG-1432), and will not adversely impact plant safety.

The proposed change in the frequency of test performance from 31 days to 18 months for verification that all automatic ECCS (SR 4.5.2.a.5) and CS (4.6.2.1.1.a.5) valves actuate to the correct position following an actual or simulated signal is consistent with other current Millstone Unit No. 2 automatic valve testing requirements (e.g., SR 4.6.3.1.2.a for containment isolation valves and SR 4.7.1.2.c for auxiliary feedwater valves). The less restrictive change in frequency is acceptable because it is consistent with standard industry practices and guidelines that are based on engineering judgment and operating experience, which have demonstrated no adverse impact on plant safety.

The removal of the additional information to verify establishment of a flowpath through the SDC heat exchangers (SR 4.6.2.1.1.a.5) will not result in any technical change to the requirement and will not adversely affect test performance. The proposed surveillance requirements (SR 4.6.2.1.1.a and SR 4.6.2.1.1.c) will verify proper valve position and that the automatic valves operate properly to establish the required flowpath.

Removal of the requirement to verify each ECCS subsystem is aligned to receive power from a separate and operable emergency bus will not affect subsystem operability. This is redundant to the Millstone Unit No. 2 Technical Specification definition of operable which requires normal and emergency power supply, except as provided by Technical Specification 3.0.5. In addition, it is not necessary to specify separate emergency busses. The degree of separation and the level of independence between the respective subsystems and the associated emergency busses is a design feature. The Millstone Unit No. 2 FSAR describes the approved degree of separation and level of independence between the respective subsystems and emergency busses. If the approved degree of separation and level of independence are not maintained, an evaluation will be necessary to determine ECCS subsystem operability. Therefore, it is not necessary to include a check that each subsystem is aligned to separate emergency busses. (SR 4.5.2.a.9)

The deletion of the surveillance requirements (SR 4.5.2.c.5 and SR 4.6.2.1.1.c) which verify leakage rates from portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident (e.g., post LOCA recirculation phase) will not adversely impact the consequences of any design basis accident. This source of potential radioactive leakage is already addressed by Technical Specification 6.13, "Systems Integrity," which requires a program to be implemented "to reduce leakage from systems outside containment that would, or could, contain highly radioactive fluids during a serious transient, or accident, to as low as practical levels." Millstone Unit No. 2 has implemented the program required by Technical Specification 6.13. This program, which is currently contained in the Millstone Unit No. 2 TRM, addresses the HPSI and CS Systems. This program is used to ensure that the leakage rates assumed in the determination of the radiological consequences of the design basis accidents are not exceeded. Therefore, removal of these redundant surveillance requirements will not result in any technical change to the current requirements.

The proposed relocation of the requirement (SR 4.5.2.b) to perform a visual inspection of containment from Technical Specifications to the TRM is acceptable since this is a good housekeeping item, which is an integral part of any maintenance or surveillance activity. It does not verify operability of the ECCS or any ECCS functions assumed in the safety analysis. This approach is consistent with NUREG-1432, which does not contain a requirement to inspect the containment sump prior to establishing containment integrity. In addition, the containment sump will continue to be inspected every 18 months as required by SR 4.5.2.c.2 (proposed SR 4.5.2.j).

The proposed relocation of the requirement (SR 4.5.2.f) which verifies proper flow distribution following any modifications that could alter system flow characteristics will be relocated from Technical Specifications to the TRM is acceptable since this is associated with a maintenance activity. Post maintenance testing following a system modification is already required to the extent necessary to ensure the modification has not adversely affected the flow distribution (system operability). It is implicit in the definition of operability and does not need to be restated in the surveillance requirement section of this specification. The determination of the appropriate post maintenance testing will be based on the work performed. If the work could adversely affect flow distribution, the post maintenance testing will verify proper flow distribution has been restored. By allowing flexibility in determining the appropriate testing, based on the work performed, unnecessary post maintenance testing can be avoided. This approach is consistent with standard industry practices and guidelines.

The proposed change to SR 4.5.3.1 to specify the required surveillance tests will clearly identify the required tests for ECCS (HPSI) subsystem operability. This will provide additional assurance the required testing will be performed. In addition, only the applicable portions of the listed surveillance requirements are required since some of the referenced surveillance requirements include LPSI components not required by Technical Specification 3.5.3. This will not change the number or scope of the surveillance requirements for this specification. This is consistent with NUREG-1432 (Technical Specification 3.5.3).

The proposed changes associated with the requirement to verify each containment spray nozzle (SR 4.6.2.1.1.d) will not adversely affect test performance or the ability of the nozzles to function for accident mitigation. It is not necessary to include specific test details in the requirement. The less restrictive change in frequency is acceptable because it is consistent with standard industry practices and guidelines that are based on engineering judgment and operating experience, which have demonstrated no adverse impact on plant safety.

The proposed addition of the statement that testing (SR 4.7.1.2.b) of the steam turbine driven AFW pump is required within 24 hours after reaching 800 psig in the steam generators will provide additional guidance to the plant operators. The use of a 24 hour time limit is consistent with the guidance contained in GL 87-09 and NUREG-1432. Allowing certain testing to be delayed until the necessary plant conditions can be established will not adversely impact the ability of the steam turbine driven AFW pump to function if required. It is a basic assumption that the steam turbine driven AFW pump will pass the required testing when performed. Otherwise, plant startup to Mode 3 is not allowed in accordance with Technical Specification 3.0.4.

The requirement to verify proper alignment of the AFW flow paths by verifying flow from the condensate storage tank to the steam generators after a shutdown of significant duration will not change (SR 4.7.1.2.b). It will be clarified by replacing "Cold Shutdown" with Mode 5, Mode 6, and defueled. A cumulative time period of greater than 30 days will be specified instead of the current time period of at least 30 days. In addition, the flow test will be required before entering Mode 2, instead of the current before entering Mode 3. This will ensure AFW capability is verified after an extended shutdown before the reactor is taken critical which can result in a significant increase in heat removal requirements. The proposed changes should result in a reduction in the number of starts of the steam turbine driven AFW pump since this test will not be required until after sufficient steam pressure has developed which will allow performance of the steam turbine driven AFW pump flow test at the same time. The less restrictive operating mode and shutdown duration changes will not adversely affect test performance. This is consistent with NUREG-1432 (Technical Specification 3.7.5).

Miscellaneous Changes

The editorial changes proposed (e.g., adding an amendment number, combining requirements, renumbering a requirement, modifying index pages) will not result in any technical changes to the associated requirements.

Bases Changes

The Bases for these Technical Specifications will be expanded to include technical information that was originally contained in the LCOs, describe the associated surveillance requirements and to include technical information that was not included in the proposed surveillance requirements. This approach, to include additional information that describes LCO and surveillance requirements in the associated Bases, is consistent with NUREG-1432.

The current Bases for the Technical Specifications affected by the proposed changes contain descriptions of the pump surveillance requirements. These descriptions discuss how instrument uncertainty is applied to the pump acceptance criteria values currently contained in the surveillance requirements. Since the proposed changes will remove the pump acceptance criteria values from the surveillance requirements, it is no longer necessary to include a discussion of instrument uncertainty in the associated Bases. This information will be removed from the associated Bases. The IST Program will control the instrument uncertainty information. The pump acceptance criteria values specified by design basis requirements will be verified by the IST Program.

Conclusion

The proposed changes to the Technical Specifications and Bases will not adversely affect the availability or operation of the equipment used to mitigate the design basis accidents. There will be no adverse effect on plant operation. The plant response to the design basis accidents will not change. The proposed changes are consistent with industry/NRC guidance contained in NUREG-0212, NUREG-1432, NUREG-1482, GL 87-09, and GL 93-05. The risk of a plant transient due to surveillance testing, personnel radiation exposure, and equipment degradation will be reduced as a result of the proposed changes. In addition, a review of the Millstone Unit No. 2 surveillance test data for the equipment affected by the proposed changes for the previous three years indicates that equipment performance issues were promptly corrected and that the equipment is reliable. Therefore, there will be no adverse impact on public health and safety. Thus, the proposed changes are safe.

TABLE 1 (Page 1 of 3)
SURVEILLANCE REQUIREMENT MATRIX

Technical Specification	Current SR	Proposed SR
3.1.1.3	4.1.1.3.a	4.1.1.3.1.a
	4.1.1.3.b	4.1.1.3.1.b
		4.1.1.3.2 Added
3.1.2.1 Relocated to TRM	4.1.2.1.a	Relocated to TRM
	4.1.2.1.b	Relocated to TRM
	4.1.2.1.c	Relocated to TRM
3.1.2.2 Relocated to TRM	4.1.2.2.a	Relocated to TRM
	4.1.2.2.b	Relocated to TRM
	4.1.2.2.c	Relocated to TRM
	4.1.2.2.d	Relocated to TRM
3.1.2.3 Relocated to TRM	4.1.2.3.1.a	Relocated to TRM
	4.1.2.3.1.b	Relocated to TRM
	4.1.2.3.2	4.1.1.3.2 Added
3.1.2.4 Relocated to TRM	4.1.2.4.1.a	Relocated to TRM
	4.1.2.4.1.b	Relocated to TRM
	4.1.2.4.2	4.1.1.3.2 Added
3.1.2.5 Relocated to TRM	4.1.2.5.a	Relocated to TRM
	4.1.2.5.b	Relocated to TRM
	4.1.2.5.c	Relocated to TRM
3.1.2.6 Relocated to TRM	4.1.2.6.a	Relocated to TRM
	4.1.2.6.b	Relocated to TRM
	4.1.2.6.c	Relocated to TRM
3.1.2.7 Relocated to TRM	4.1.2.7.a	Relocated to TRM
	4.1.2.7.b	Relocated to TRM
	4.1.2.7.c	Relocated to TRM

TABLE 1 (Page 2 of 3)
SURVEILLANCE REQUIREMENT MATRIX

Technical Specification	Current SR	Proposed SR
3.1.2.8 Relocated to TRM	4.1.2.8.a	Relocated to TRM
	4.1.2.8.b	Relocated to TRM
	4.1.2.8.c	Relocated to TRM
	4.1.2.8.d	Relocated to TRM
3.5.2	4.5.2.a.1	4.5.2.c
	4.5.2.a.1.a	4.5.2.g
	4.5.2.a.1.b	4.5.2.c
	4.5.2.a.1.c	Deleted
	4.5.2.a.2	4.5.2.d
	4.5.2.a.2.a	4.5.2.g
	4.5.2.a.2.b	4.5.2.d
	4.5.2.a.2.c	Deleted
	4.5.2.a.3	4.5.2.e
	4.5.2.a.3.a	Deleted
	4.5.2.a.3.b	Deleted
	4.5.2.a.4	Relocated to TRM
	4.5.2.a.5	4.5.2.f
	4.5.2.a.6	Deleted
	4.5.2.a.7	4.5.2.a
	4.5.2.a.8	4.5.2.a
	4.5.2.a.9	Deleted
	4.5.2.a.10	4.5.2.b
	4.5.2.b	Relocated to TRM
	4.5.2.c.1	4.5.2.k
	4.5.2.c.2	4.5.2.j
	4.5.2.c.3	Previously Deleted
	4.5.2.c.4	Previously Deleted
	4.5.2.c.5	6.13
	4.5.2.d	Deleted
	4.5.2.e.1	4.5.2.i.1
	4.5.2.e.2	Deleted
	4.5.2.e.3	4.5.2.i.2
	4.5.2.f	Relocated to TRM
	4.5.2.g.1	Relocated to TRM
	4.5.2.g.2	Relocated to TRM
		4.5.2.h Added
3.5.3	4.5.3.1	4.5.3.1

TABLE 1 (Page 3 of 3)
SURVEILLANCE REQUIREMENT MATRIX

Technical Specification	Current SR	Proposed SR
3.6.2.1	4.6.2.1.1.a.1	Deleted
	4.6.2.1.1.a.2	4.6.2.1.1.b
	4.6.2.1.1.a.3	Deleted
	4.6.2.1.1.a.4	Deleted
	4.6.2.1.1.a.5	4.6.2.1.1.c
	4.6.2.1.1.a.6	4.6.2.1.1.a
	4.6.2.1.1.b	Deleted
	4.6.2.1.1.c	6.13
	4.6.2.1.1.d	4.6.2.1.1.e
		4.6.2.1.1.d Added
	4.6.2.1.2.a	Deleted
	4.6.2.1.2.b	4.6.2.1.2.a
	4.6.2.1.2.c	4.6.2.1.2.b
		4.6.2.1.2.c Added
3.7.1.2	4.7.1.2.a.1	Deleted
	4.7.1.2.a.2.a	4.7.1.2.b
	4.7.1.2.a.2.b*	4.7.1.2.b
	4.7.1.2.a.3	Deleted
	4.7.1.2.a.4	Deleted
	4.7.1.2.a.5	4.7.1.2.a
	4.7.1.2.a.6	4.7.1.2.a
	4.7.1.2.b	4.7.1.2.e
	4.7.1.2.c.1	4.7.1.2.c
	4.7.1.2.c.2	4.7.1.2.d

Attachment 2

Millstone Nuclear Power Station, Unit No. 2

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems
Significant Hazards Consideration

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems
Significant Hazards Consideration

Description of License Amendment Request

Dominion Nuclear Connecticut, Inc. (DNC), hereby proposes to revise the Millstone Unit No. 2 Technical Specifications as described in this License Amendment Request. The proposed changes will relocate the Boration System (BS) Technical Specification requirements to the Technical Requirements Manual (TRM). As a result of revising the Millstone Unit No. 2 Loss of Coolant Accident (LOCA) analysis, it is no longer necessary to retain the BS requirements in the Millstone Unit No. 2 Technical Specifications. Additional changes to retain boron dilution analysis restrictions have been included as a result of the relocation of the BS requirements to the TRM.

The proposed changes will also revise the Technical Specification Limiting Condition for Operation (LCO), action, and surveillance requirements associated with the Emergency Core Cooling, Containment Spray and Cooling, and Auxiliary Feedwater Systems. The proposed changes will remove redundant testing requirements that are already addressed by the Inservice Testing (IST) Program, which is required pursuant to Technical Specification 4.0.5. The proposed changes will also replace the acceptance criteria and frequency requirements of some surveillance requirements with a reference to Technical Specification 4.0.5 (IST Program). The IST Program will verify the specific acceptance criteria, consistent with design basis requirements, and control the frequency of test performance. The proposed changes will increase the allowed outage time and shutdown time for an inoperable train (subsystem) of the Emergency Core Cooling System, consistent with standard industry guidelines and other Millstone Unit No. 2 Technical Specifications. The index and associated Bases for the associated Technical Specifications will also be modified. Refer to Attachment 1 of this submittal for a detailed discussion of the proposed changes.

Significant Hazards Consideration

In accordance with 10 CFR 50.92, DNC has reviewed the proposed changes and has concluded that they do not involve a significant hazards consideration (SHC). The basis for this conclusion is that the three criteria of 10 CFR 50.92(c) are not compromised. The proposed changes do not involve an SHC because the changes would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed Technical Specification changes associated with the relocation of Technical Specification requirements to the TRM, and modifications to existing Technical Specification LCOs, action requirements, and surveillance requirements will not cause an accident to occur and will not result in any change in the operation of the associated accident mitigation equipment. The ability of the equipment associated with the proposed changes to mitigate the design basis accidents will not be affected. The proposed Technical Specification requirements are sufficient to ensure the required accident mitigation equipment will be available and function properly for design basis accident mitigation. The proposed allowed outage time and shutdown time are reasonable and consistent with standard industry guidelines to ensure the accident mitigation equipment will be restored in a timely manner. In addition, the design basis accidents will remain the same postulated events described in the Millstone Unit No. 2 Final Safety Analysis Report, and the consequences of those events will not be affected. Therefore, the proposed changes will not increase the probability or consequences of an accident previously evaluated.

The additional proposed changes to the Technical Specifications (e.g., relocating information to the Bases, adding an amendment number, combining requirements, renumbering a requirement, modifying index pages) will not result in any technical changes to the current requirements. Therefore, these additional changes will not increase the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes to the Technical Specifications do not impact any system or component that could cause an accident. The proposed changes will not alter the plant configuration (no new or different type of equipment will be installed) or require any unusual operator actions. The proposed changes will not alter the way any structure, system, or component functions, and will not alter the manner in which the plant is operated. There will be no adverse effect on plant operation or accident mitigation equipment. The response of the plant and the operators following an accident will not be different. In addition, the proposed changes do not introduce any new failure modes. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

The proposed Technical Specification changes associated with the relocation of Technical Specification requirements to the TRM, and modifications to existing Technical Specification LCOs action requirements, and surveillance requirements will not cause an accident to occur and will not result in any change in the operation of the associated accident mitigation equipment. The equipment associated with the proposed Technical Specification changes will continue to be able to mitigate the design basis accidents as assumed in the safety analysis.

The relocated requirements are associated with equipment no longer required for design basis accident mitigation. The proposed surveillance requirements are adequate to ensure proper operation of the affected accident mitigation equipment. The proposed allowed outage time and shutdown time are reasonable and consistent with standard industry guidelines to ensure the accident mitigation equipment will be restored in a timely manner. In addition, the proposed changes will not affect equipment design or operation, and there are no changes being made to the Technical Specification required safety limits or safety system settings. The proposed Technical Specification changes, in conjunction with existing administrative controls (e.g., IST Program), will provide adequate control measures to ensure the accident mitigation functions are maintained. Therefore, the proposed changes will not result in a reduction in a margin of safety.

The additional proposed changes to the Technical Specifications (e.g., relocating information to the Bases, adding an amendment number, combining requirements, renumbering a requirement, modifying index pages) will not result in any technical changes to the current requirements. Therefore, these additional changes will not result in a reduction in a margin of safety.

Attachment 3

Millstone Nuclear Power Station, Unit No. 2

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems
Marked Up Pages

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling, and Auxiliary Feedwater Systems
<u>Marked Up Pages</u>

The following Technical Specification and associated Bases pages have been proposed to be changed.

Technical Specification Section Number	Title(s) of Section(s)	Page and Revision Numbers
	Index	IV Amend. 185 XI Amend. 245
3/4.1.1.3	Reactivity Control Systems Boron Dilution	3/4 1-4 Amend. 215
3/4.1.2.1	Reactivity Control Systems Boration Systems - Flow Paths - Shutdown	3/4 1-8 Amend. 218
3/4.1.2.2	Reactivity Control Systems Boration Systems - Flow Paths - Operating	3/4 1-9 Amend. 185 3/4 1-10 Amend. 218
3/4.1.2.3	Reactivity Control Systems Charging Pump - Shutdown	3/4 1-11 Amend. 243
3/4.1.2.4	Reactivity Control Systems Charging Pumps Operating	3/4 1-13 Amend. 243
3/4.1.2.5	Reactivity Control Systems Boration Systems - Boric Acid Pumps - Shutdown	3/4 1-14 Amend. 218
3/4.1.2.6	Reactivity Control Systems Boration Systems - Boric Acid Pumps - Operating	3/4 1-15 Amend. 218
3/4.1.2.7	Reactivity Control Systems Borated Water Sources - Shutdown	3/4 1-16 Amend. 133 3/4 1-16a Amend. 133 3/4 1-17 Amend. 133
3/4.1.2.8	Reactivity Control Systems Borated Water Sources - Operating	3/4 1-18 Amend. 185 3/4 1-19 Amend. 218
3/4.5.2	Emergency Core Cooling System - ECCS Subsystems - Tavg $\geq$ 300°F	3/4 5-3 Amend. 52 3/4 5-4 Amend. 236 3/4 5-5 Amend. 238 3/4 5-5a Amend. 215 3/4 5-6 Amend. 238 3/4 5-6a Amend. 238

Technical Specification Section Number	Title(s) of Section(s)	Page and Revision Numbers
3/4.5.3	Emergency Core Cooling System - ECCS Subsystems - Tavg < 300 °F	3/4 5-7 Amend. 227
3/4.6.2.1	Containment Systems Depressurization and Cooling Systems - Containment Spray and Cooling Systems	3/4 6-12 Amend. 236 3/4 6-13 Amend. 215
3/4.7.1.2	Plant Systems Auxiliary Feedwater Pumps	3/4 7-4 Amend. 236 3/4 7-5 Amend. 63
3/4.1.1.3	Boron Dilution	B 3/4 1-1 TSCR 2-2-02
3/4.1.2	Boration Systems	B 3/4 1-2 Amend. 218 B 3/4 1-3 Amend. 248 B 3/4 1-3a TSCR 2-20-01
3/4.5.2 and 3/4.5.3	ECCS Subsystems	B 3/4 5-2 TSCR 2-19-01 B 3/4 5-2a TSCR 2-19-01 B 3/4 5-2b TSCR 2-19-01 B 3/4 5-2c TSCR 2-19-01
3/4.6.2.1	Containment Spray and Cooling Systems	B 3/4 6-3 TSCR 2-8-01 B 3/4 6-3a NRC letter dated 10/4/01
3/4.7.1.2	Auxiliary Feedwater Pumps	B 3/4 7-2 TSCR 2-22-01 B 3/4 7-2b TSCR 2-22-01

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

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BASES

SECTION | PAGE

May 26, 1998

REACTIVITY CONTROL SYSTEMS

BORON DILUTION

LIMITING CONDITION FOR OPERATION

The following boron dilution restrictions shall be met:
a.

3.1.1.3 The flow rate of reactor coolant through the core shall be ≥ 1000 gpm whenever a reduction in Reactor Coolant System boron concentration is being made.

INSERT A

APPLICABILITY: ALL MODES.

ACTION: a.

With the flow rate of reactor coolant through the core < 1000 gpm, immediately suspend all operations involving a reduction in boron concentration of the Reactor Coolant System.

INSERT B

SURVEILLANCE REQUIREMENTS

4.1.1.3* .1 The reactor coolant flow rate through the core shall be determined to be ≥ 1000 gpm prior to the start of and at least once per hour during a reduction in the Reactor Coolant System boron concentration by either:

a. Verifying at least one reactor coolant pump is in operation, or

b. Verifying that at least one low pressure safety injection pump is in operation and supplying ≥ 1000 gpm through the core.

INSERT C

*When the plant is in MODE 1 or 2, reactor coolant pumps are required to be in operation. Therefore, Surveillance Requirement 4.1.1.3 .1 does not have to be performed in MODES 1 and 2. This exception does not apply if operating in accordance with Special Test Exception 3.10.4.

INSERT A - Page 3/4 1-4

b. A maximum of two charging pumps shall be capable of injecting into the Reactor Coolant System whenever the temperature of one or more of the Reactor Coolant System cold legs is < 300°F.

INSERT B - Page 3/4 1-4

b. With more than two charging pumps capable of injecting into the Reactor Coolant System and the temperature of one or more of the Reactor Coolant System cold legs is < 300°F, take immediate action to comply with 3.1.1.3.b.

INSERT C - Page 3/4 1-4

4.1.1.3.2 One charging pump shall be demonstrated not capable of injecting into the Reactor Coolant System at least once per 12 hours whenever the temperature of one or more of the Reactor Coolant System cold legs is < 300°F.

3/4.1.2 BORATION SYSTEMS

FLOW PATHS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.1 As a minimum, one of the following boron injection flow paths shall be OPERABLE:

a. A flow path with a piping temperature of greater than 55°F from the boric acid storage tank via either a boric acid pump or a gravity feed connection and a charging pump to the Reactor Coolant System if only the boric acid storage tank in Specification 3.1.2.7a is OPERABLE, or

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System if only the refueling water storage tank in Specification 3.1.2.7b is OPERABLE.

APPLICABILTIY: MODES 5 and 6.

ACTION:

With none of the above flow paths OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until at least one injection path is restored to OPERABLE status.

SURVEILLANCE REQUIREMENT

4.1.2.1 At least one of the above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by exercising all testable power operated valves in the flow path required for boron injection through at least one complete cycle,

b. At least once per 31 days by verifying the correct position of all manually operated valves in the boron injection flow path not locked, sealed or otherwise secured in position.

c. At least once per 24 hours by verifying that the boric acid piping temperature is greater than 55°F. This may be accomplished by verifying that the ambient temperature in the vicinity of the boric acid piping on elevations (-)5'-0" and (-)25'-6" is greater than 55°F.

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February 15, 1995

REACTIVITY CONTROL SYSTEMS

FLOW PATHS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.2 The following boron injection flowpaths to the RCS via the charging pump(s) shall be OPERABLE:

a. At least one of the following combinations:

1) One boric acid storage tank, with the tank contents in accordance with Figure 3.1-1 and a piping temperature greater than 55°F, its associated gravity feed valve, and boric acid pump.

2) Two boric acid storage tanks, with the weighted average of the combined contents of the tanks in accordance with Figure 3.1-1 and a piping temperature greater than 55°F, their associated gravity feed valves, and boric acid pumps.

3) Two boric acid storage tanks, each with contents in accordance with Figure 3.1-1 and a piping temperature greater than 55°F, at least one gravity feed valve, and at least one boric acid pump.

b. The flow path from an OPERABLE Refueling Water Storage Tank, as per Specification 3.1.2.8.b.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With fewer than the above required boron injection flow paths to the Reactor Coolant System OPERABLE, restore the required boron injection flow paths to the Reactor Coolant System to OPERABLE status within 48 hours or make the reactor subcritical within the next 2 hours and borate to a SHUTDOWN MARGIN equivalent to at least 3.6% Δ k/k at 200°F; restore the required flow paths to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 36 hours.

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SURVEILLANCE REQUIREMENT

4.1.2.2 The above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by exercising all testable power operated valves in each flow path through at least one complete cycle,

b. At least once per 31 days by verifying the correct position of all manually operated valves in the boron injection flow path not locked, sealed or otherwise secured in position, and

c. At least once per 18 months, during shutdown, by exercising all power operated valves in each flow path through at least one complete cycle.

d. At least once per 24 hours by verifying that the boric acid piping temperature is greater than 55°F. This may be accomplished by verifying that the ambient temperature in the vicinity of the boric acid piping on elevations (-)5'-0" and (-)25-6" is greater than 55°F.

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REACTIVITY CONTROL SYSTEMS

March 30, 2000

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 At least one charging pump in the boron injection flow path required OPERABLE pursuant to Specification 3.1.2.1 shall be OPERABLE. A maximum of two charging pumps shall be capable of injecting into the RCS.

APPLICABILITY: MODES 5 and 6.

ACTION:

a. With no charging pump OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until one charging pump is restored to OPERABLE status.

b. With more than two charging pumps capable of injecting into the RCS take immediate action to comply with 3.1.2.3.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump shall be demonstrated OPERABLE at least once per 31 days by:

a. Starting (unless already operating) the pump from the control room, and

b. Verifying pump operation for at least 15 minutes.

4.1.2.3.2 One charging pump shall be demonstrated not capable of injecting into the RCS at least once per 12 hours.

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July 1, 1998

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CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two** charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4*.

ACTION:

a. With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 48 hours or be in HOT STANDBY within the next 4 hours; restore at least two charging pumps to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 36 hours.

b. With more than two charging pumps capable of injecting into the RCS and the temperature of one or more of the RCS cold legs < 300°F, take immediate action to comply with 3.1.2.4.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 Two charging pumps shall be demonstrated OPERABLE at least once per 31 days on a STAGGERED TEST BASIS by:

a. Starting (unless already operating) each pump from the control room, and

b. Verifying that each pump operates for at least 15 minutes.

4.1.2.4.2 One charging pump shall be demonstrated not capable of injecting into the RCS at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is < 300°F.

*The provisions of Specification 3.0.4 and 4.0.4 are not applicable for entry into MODE 4 for the charging pump that is inoperable pursuant to Specification 3.4.9.3 provided the charging pump is restored to OPERABLE status within at least 4 hours or prior to entering MODE 3, whichever comes first.

**A maximum of two charging pumps shall be capable of injecting into the RCS whenever the temperature of one or more of the RCS cold legs is less than 300°F.

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REACTIVITY CONTROL SYSTEMS

BORIC ACID PUMPS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.5 At least one boric acid pump shall be OPERABLE if only the flow path through the boric acid pump in Specification 3.1.2.1a is OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no boric acid pump OPERABLE as required to completed the flow path of Specification 3.1.2.1a, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until at least one boric acid pump is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.5 One boric acid pump shall be demonstrated OPERABLE at least once per 7 days by:

a. Starting (unless already operating) the pump from the control room,

b. Verifying, that on recirculation flow, the pump develops a discharge pressure of ≥ 98 psig, and

c. Verifying pump operation for at least 15 minutes.

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REACTIVITY CONTROL SYSTEMS

BORIC ACID PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 The boric acid pump(s) in the boron injection flow path(s) required OPERABLE pursuant to Specification 3.1.2.2.a shall be OPERABLE if the flow path through the boric acid pump in Specification 3.1.2.2.a is OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the boric acid pump(s) required for the boron injection flow path(s) pursuant to Specification 3.1.2.2.a inoperable, restore the boric acid pump(s) to OPERABLE STATUS within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.6 The boric acid pump(s) shall be demonstrated OPERABLE at least once per 7 days by:

a. Starting (unless already operating) the pump from the control room,

b. Verifying, that on recirculation flow, the pump develops a discharge pressure of $\geq$ 98 psig, and

c. Verifying pump operation for at least 15 minutes.

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REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be OPERABLE:

a. One boric acid storage tank with:

1. A concentration between 2.5 and 3.5 weight percent boric acid.
2. A minimum volume of 3750 gallons, and
3. A minimum boric acid storage tank temperature of 55°F.

or b. The refueling water storage tank with:

1. A minimum contained volume of 57,300 gallons,
2. A minimum boron concentration of 1720 ppm when in Mode 5,
3. A minimum boron concentration as defined in Specification 3.9.1 when in Mode 6.
4. A minimum solution temperature of 35°F.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until at least one borated water source is restored to OPERABLE status.

SURVEILLANCE REQUIREMENT

4.1.2.7 The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water, and
2. Verifying the water level of the tank

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October 11, 1988

LIMITING CONDITION FOR OPERATION

b. At least once per 24 hours by verifying the RWST temperature when it is the source of borated water and the RWST ambient air temperature is <35°F.

c. At least once per 24 hours by verifying that the Boric Acid Storage Tank temperature is greater than 55°F when it is the source of borated water. This may be accomplished by verifying that the ambient air temperature in the vicinity of the BAST is greater than 55°F.

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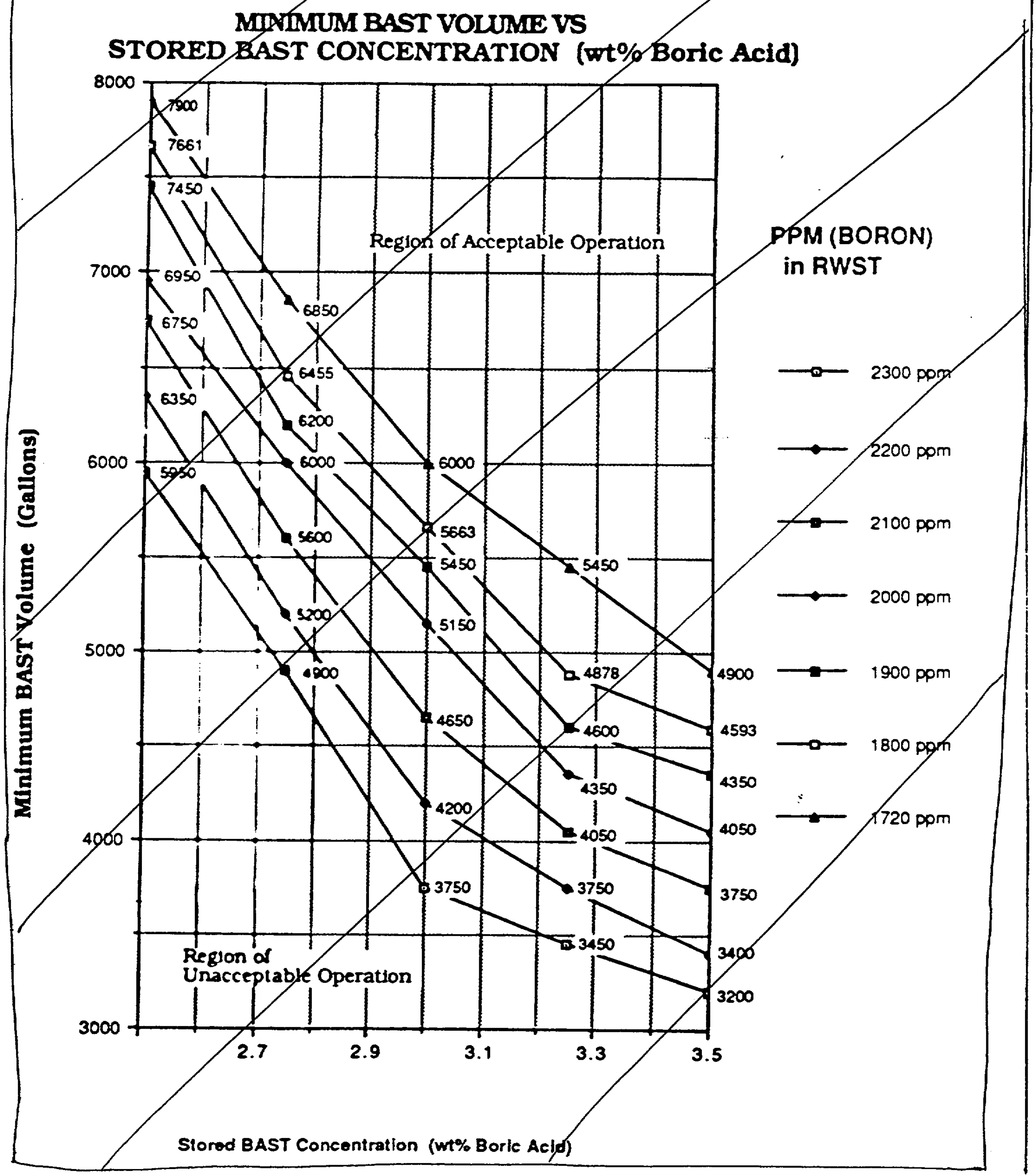
FIGURE 3.1-1



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REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.8 Both of the following borated water sources shall be OPERABLE:

a. At least one of the following Boric Acid Storage Tank(s) combinations:

1) One boric acid storage tank, with the tank contents in accordance with Figure 3.1-1 and a minimum temperature of 55°F, its associated gravity feed valve, and boric acid pump, or

2) Two boric acid storage tanks, with the weighted average of the combined contents of the tanks in accordance with Figure 3.1-1 and a minimum temperature of 55°F, their associated gravity feed valves, and boric acid pumps, or

3) Two boric acid storage tanks, each with contents in accordance with Figure 3.1-1 and a minimum temperature of 55°F, at least one gravity feed valve, and at least one boric acid pump.

and b. The refueling water storage tank with:

1. A minimum contained volume of 370,000 gallons of water,
2. A minimum boron concentration of 1720 ppm,
3. A minimum solution temperature of 50°F when in MODES 1 and 2, and
4. A minimum solution temperature of 35°F when in MODES 3 and 4.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one borated water source OPERABLE, restore at least two borated water sources to OPERABLE status within 48 hours or make the reactor subcritical within the next 2 hours and borate to a SHUTDOWN MARGIN equivalent to at least 3.6% Δk/k at 200°F; restore at least two borated water sources to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 36 hours.

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July 1, 1998

SURVEILLANCE REQUIREMENTS

4.1.2.8 Each borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration in each water source, and

2. Verifying the water level in each water source.

b. When in MODES 3 and 4, at least once per 24 hours by verifying the RWST temperature is ≥35°F when the RWST ambient air temperature is <35°F.

c. When in Modes 1 and 2, at least once per 24 hours by verifying the RWST temperature is ≥50°F when the RWST ambient air temperature is <50°F.

d. At least once per 24 hours by verifying that the boric acid storage tank temperatures are greater than 55°F. This may be accomplished by verifying that the ambient air temperature in the vicinity of the boric acid storage tanks is greater than 55°F.

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EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS - $T_{avg} \geq 300°F$

LIMITING CONDITION FOR OPERATION

3.5.2 Two ~~separate and independent~~ ECCS subsystems shall be OPERABLE ~~with each subsystem comprised of:~~ .

a. One OPERABLE high-pressure safety injection pump,

b. One OPERABLE low-pressure safety injection pump,

c. A separate and independent OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection actuation signal and automatically transferring suction to the containment sump on a sump recirculation actuation signal, and

d. One OPERABLE charging pump with a separate and independent OPERABLE flow path from an OPERABLE Boric Acid Storage Tank via either an OPERABLE Boric Acid Pump or a gravity feed connection.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within ~~48~~ 72 hours or be in ~~HOT SHUTDOWN within the next 12 hours.~~ HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

*With pressurizer pressure $\geq$ 1750 psia.

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

INSERT D

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying that each high-pressure safety injection pump:

   a) Starts automatically on a test signal.

   b) Develops a differential pressure of ≥ 1193 psid on recirculation flow.

   c) Operates for at least 15 minutes.

2. Verifying that each low-pressure safety injection pump:

   a) Starts automatically on a test signal.

   b) Develops a differential pressure of ≥ 163 psid on recirculation flow.

   c) Operates for at least 15 minutes.

3. Verifying that each charging pump:

   a) Starts automatically on a test signal.

   b) Operates for at least 15 minutes.

4. Verifying that each boric acid pump (when required OPERABLE per Specification 3.5.2.d):

   a) Starts automatically on a test signal.

   b) Develops a discharge pressure of ≥ 98 psig on recirculation flow.

   c) Operates for at least 15 minutes.

5. Verifying that upon a sump recirculation actuation signal, the containment sump isolation valves open.

6. Cycling each testable, automatically operated valve through at least one complete cycle.

7. Verifying the correct position for each manual valve not locked, sealed or otherwise secured in position.

8. Verifying the correct position for each remote or automatically operated valve.

9. Verifying that each ECCS subsystem is aligned to receive electrical power from separate OPERABLE emergency busses.

a. At least once per 31 days by verifying each Emergency Core Cooling System manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.

b. At least once per 31 days by verifying that the following valves are in the indicated position with power to the valve operator removed:

Valve Number	Valve Function	Valve Position
2-SI-306	Shutdown Cooling Flow Control	Open**
2-SI-659	SRAS Recirc.	Open*
2-SI-660	SRAS Recirc.	Open*

* To be closed prior to recirculation following LOCA.

** Pinned and locked at preset throttle open position.

c. By verifying the developed head of each high pressure safety injection pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

d. By verifying the developed head of each low pressure safety injection pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

e. By verifying the delivered flow of each charging pump at the required discharge pressure is greater than or equal to the required flow when tested pursuant to Specification 4.0.5.

f. At least once per 18 months by verifying each Emergency Core Cooling System automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.

g. At least once per 18 months by verifying each high pressure safety injection pump and low pressure safety injection pump starts automatically on an actual or simulated actuation signal.

h. At least once per 18 months by verifying each low pressure safety injection pump stops automatically on an actual or simulated actuation signal.

i. By verifying the correct position of each electrical and/or mechanical position stop for each injection valve in Table 4.5-1:

   1. Within 4 hours after completion of valve operations.

   2. At least once per 18 months.

j. At least once per 18 months by verifying through visual inspection of the containment sump that each Emergency Core Cooling System subsystem suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.

k. At least once per 18 months by verifying the Shutdown Cooling System open permissive interlock prevents the Shutdown Cooling System inlet isolation valves from being opened with an actual or simulated Reactor Coolant System pressure signal of $\geq$ 300 psia.

10. Verifying that the following valves are in the indicated position with power to the valve operator removed:

Valve Number	Valve Function	Valve Position
2-SI-306	Shutdown Cooling Flow Control	Open**
2-SI-659	SRAS Recirc.	Open*
2-SI-660	SRAS Recirc.	Open*

b. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2 Of the areas affected within containment at the completion of containment entry when CONTAINMENT INTEGRITY is established.

c. At least once per 18 months by:

1. Verifying automatic interlock action of the shutdown cooling system from the reactor coolant system by ensuring that with a simulated reactor coolant system pressure signal greater than or equal to 300 psia the interlock prevents the shutdown cooling system suction valves from being opened.

2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

3. DELETED

4. DELETED

*To be closed prior to recirculation following LOCA.
**Pinned and locked at preset throttle open position.

SURVEILLANCE REQUIREMENTS (Continued)

5. Verifying a total leak rate less than or equal to 12 gallons per hour for the high pressure safety injection system in conjunction with the containment spray system (reference Specification 4.6.2.1.1.c) at:

   a) A high pressure safety injection pump discharge pressure of greater than or equal to 1125 psig on recirculation flow, for the parts of the system between the pump discharge and the header injection valves, including the pump seals.

   b) Greater than or equal to 22 psig at the pump suction for the piping from the containment sump check valve to the pump suction.

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per 18 months, during shutdown, by cycling each power operated valve in the subsystem flow path not testable during plant operation through one complete cycle of full travel.

e. By verifying the correct position of each electrical and/or mechanical position stop for each of the injection valves in Table 4.5-1. This verification shall be performed:

1. Within 4 hours following the completion of each valve stroking operation,

2. Immediately prior to returning the valve to service after maintenance, repair, or replacement work is performed on the valve or its associated actuator or its control circuit, or

3. At least once per 18 months.

f. By conducting a flow balance verification immediately prior to returning to service any portion of a subsystem after the completion of a modification that could alter system flow characteristics. The injection leg flow rate shall be as follows:

1. HPSI Headers - the sum of the three lowest injection flows must be $\geq$ 471 gpm. The sum of the four injection flows must be $\leq$ 675 gpm.

2. LPSI Header - the sum of the three lowest injection flows must be $\geq$ 2850 gpm. The sum of the four injection flows must be

$$\leq 4500 + \left[\frac{RWST\ level\ (\%) - 10(\%)}{90\%} x\ 200\right]$$

g. At least once per 18 months, during shutdown, by verifying that on a Safety Injection Actuation test signal:

1. The valves in the boron injection flow path from the boric acid storage tank via the boric acid pump and charging pump actuate to their required positions, and

2. The charging pump and boric acid pump start automatically.

Table 4.5-1

ECCS INJECTION VALVES

NO CHANGE
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1.	2-SI-617	"A" HPSI Header - Loop 1A Injection
2.	2-SI-627	"A" HPSI Header - Loop 1B Injection
3.	2-SI-637	"A" HPSI Header - Loop 2A Injection
4.	2-SI-647	"A" HPSI Header - Loop 2B Injection
5.	2-SI-616	"B" HPSI Header - Loop 1A Injection
6.	2-SI-626	"B" HPSI Header - Loop 1B Injection
7.	2-SI-636	"B" HPSI Header - Loop 2A Injection
8.	2-SI-646	"B" HPSI Header - Loop 2B Injection
9.	2-SI-615	LPSI Header - Loop 1A Injection
10.	2-SI-625	LPSI Header - Loop 1B Injection
11.	2-SI-635	LPSI Header - Loop 2A Injection
12.	2-SI-645	LPSI Header - Loop 2B Injection

ECCS SUBSYSTEMS - T_{avg} < 300°F

LIMITING CONDITION FOR OPERATION

3.5.3 One ~~ECCS~~ high pressure safety injection subsystem ~~comprised of the following~~ shall be OPERABLE~~:~~.

a. ~~One OPERABLE**** high-pressure safety injection pump**, and~~

b. ~~An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection actuation signal and automatically transferring suction to the containment sump on a sump recirculation actuation signal.***~~

APPLICABILITY: MODES 3* and 4.

ACTION:

a. With no ~~ECCS~~ high pressure safety injection subsystem OPERABLE, restore at least one ~~ECCS~~ high pressure safety injection subsystem to OPERABLE status within one hour or be in COLD SHUTDOWN within the next ~~20~~ 24 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ~~ECCS~~ high pressure safety injection subsystem shall be demonstrated OPERABLE per the applicable portions of Surveillance Requirements ~~of 4.5.2~~ INSERT E.

* With pressurizer pressure < 1750 psia.

move to after LCO and before applicability

--- NOTES ---

~~**~~ 1. The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 4 for the high pressure safety injection pump that is inoperable pursuant to Specification 3.4.9.3 provided the high pressure safety injection pump is restored to OPERABLE status within 1 hour after entering MODE 4.

~~***~~ 2. In MODE 4, the requirement for OPERABLE safety injection and sump recirculation actuation signals is satisfied by use of the safety injection and sump recirculation trip pushbuttons.

~~****~~ 3. In MODE 4, the OPERABLE HPSI pump is not required to start automatically on a SIAS. Therefore, the pump control switch for this OPERABLE pump may be placed in the pull-to-lock position without affecting the OPERABILITY of this pump.

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4.5.2.a, 4.5.2.b, 4.5.2.c, 4.5.2.f, 4.5.2.g, 4.5.2.i, and 4.5.2.j.

NO CHANGE
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July 1, 1998

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3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY AND COOLING SYSTEMS

June 29, 1999

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two containment spray trains and two containment cooling trains, with each cooling train consisting of two containment air recirculation and cooling units, shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

Inoperable Equipment	Required Action
a. One containment spray train	a.1 Restore the inoperable containment spray train to OPERABLE status within 72 hours or be in ~~HOT SHUTDOWN within the next 12 hours.~~ HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours.
b. One containment cooling train	b.1 Restore the inoperable containment cooling train to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.
c. One containment spray train AND One containment cooling train	c.1 Restore the inoperable containment spray train or the inoperable containment cooling train to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
d. Two containment cooling trains	d.1 Restore at least one inoperable containment cooling train to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
e. All other combinations	e.1 Enter LCO 3.0.3 immediately.

SURVEILLANCE REQUIREMENTS

4.6.2.1.1 Each containment spray train shall be demonstrated OPERABLE:

INSERT F

~~a. At least once per 31 days on a STAGGERED TEST BASIS by:~~

~~1. Starting each spray pump from the control room,~~

~~2. Verifying, that on recirculation flow, each spray pump develops a differential pressure of ≥ 232 psid.~~

*The Containment Spray System is not required to be OPERABLE in MODE 3 if pressurizer pressure is < 1750 psia.

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a. At least once per 31 days by verifying each containment spray manual, power operated, and automatic valve in the spray train flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.

b. By verifying the developed head of each containment spray pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

c. At least once per 18 months by verifying each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.

d. At least once per 18 months by verifying each containment spray pump starts automatically on an actual or simulated actuation signal.

e. At least once per 10 years by verifying each spray nozzle is unobstructed.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying that each spray pump operates for at least 15 minutes,

4. Cycling each testable, automatically operated valve in each spray train flow path through at least one complete cycle,

5. Verifying that upon a sump recirculation actuation signal the containment sump isolation valves open and that a recirculation mode flow path via an OPERABLE shutdown cooling heat exchanger is established, and

6. Verifying that all accessible manual valves not locked, sealed or otherwise secured in position and all remote or automatically operated valves in each spray train flow path are positioned to take suction from the RWST on a Containment Pressure--High-High signal.

b. At least once per 18 months, during shutdown, by cycling each power operated valve in the spray train flow path not testable during plant operation through at least one complete cycle of full travel.

c. At least once per 18 months by verifying a total leak rate less than or equal to 12 gallons per hour in conjunction with the high pressure safety injection system (reference Specification 4.5.2.c.5) at:

1) Discharge pressure of greater than or equal to 254 psig on recirculation flow for those parts of the system between the pump discharge and the header isolation valve, including the pump seals.

2) Greater than or equal to 22 psig at the pump suction for the piping from the containment sump check valve to the pump suction.

d. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

4.6.2.1.2 Each containment air recirculation and cooling unit shall be demonstrated OPERABLE ~~at least once per 31 days on a STAGGERED TEST BASIS by~~:

INSERT 6

a. Starting, in low speed, each unit from the control room,

b. Verifying that each unit operates for at least 15 minutes, and

c. Verifying a cooling water flow rate of $\geq$ 500 gpm to each cooling unit.

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a. At least once per 31 days by operating each containment air recirculation and cooling unit in slow speed for $\geq$ 15 minutes.

b. At least once per 31 days by verifying each containment air recirculation and cooling unit cooling water flow rate is $\geq$ 500 gpm.

c. At least once per 18 months by verifying each containment air recirculation and cooling unit starts automatically on an actual or simulated actuation signal.

AUXILIARY FEEDWATER PUMPS

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three steam generator auxiliary feedwater pumps shall be OPERABLE with:

a. Two feedwater pumps capable of being powered from separate OPERABLE emergency busses, and

b. One feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With two auxiliary feedwater pumps inoperable be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible. Entry into an OPERATIONAL MODE or other specified condition under the provisions of Specification 3.0.4 shall not be made with three auxiliary feedwater pumps inoperable.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

INSERT H

~~a. At least once per 31 days by:~~

~~1. Starting each pump from the control room,~~

~~2. Verifying that:~~

~~a) Each motor driven pump develops a differential pressure of ≥ 1144 psid on recirculation flow, and~~

~~b) The steam turbine driven pump develops a differential pressure of ≥ 1113 psid, corrected to rated pump speed, on recirculation flow when the secondary steam supply pressure is greater than 800 psig. The provisions of Specification 4.0.4 are not applicable for entry into Mode 3.~~

INSERT H - Page 3/4 7-4

a. At least once per 31 days by verifying each auxiliary feedwater manual, power operated, and automatic valve in each water flow path and in each steam supply flow path to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.

b. By verifying the developed head of each auxiliary feedwater pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. (Not required to be performed for the steam turbine driven auxiliary feedwater pump until 24 hours after reaching 800 psig in the steam generators. The provisions of Specification 4.0.4 are not applicable to the steam turbine driven auxiliary feedwater pump for entry into MODE 3.)

c. At least once per 18 months by verifying each auxiliary feedwater automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position, as designed, on an actual or simulated actuation signal.

d. At least once per 18 months by verifying each auxiliary feedwater pump starts automatically, as designed, on an actual or simulated actuation signal.

e. By verifying the proper alignment of the required auxiliary feedwater flow paths by verifying flow from the condensate storage tank to each steam generator prior to entering MODE 2 whenever the unit has been in MODE 5, MODE 6, or defueled for a cumulative period of greater than 30 days.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying that each pump operates for at least 15 minutes.

4. Cycling each testable, remote operated valve through at least one complete cycle.

5. Verifying the correct position for each manual valve not locked, sealed or otherwise secured in position.

6. Verifying the correct position for each remote operated valve.

b. Before entering MODE 3 after a COLD SHUTDOWN of at least 30 days by completing a flow test that verifies the flow path from the condensate storage tank to the steam generators.

c. At least once per 18 months during shutdown by:

1. Verifying that each automatic valve in the flow path actuates to its correct position upon receipt of each auxiliary feedwater actuation test signal.

2. Verifying that each auxiliary feedwater pump starts as designed automatically upon receipt of each auxiliary feedwater actuation test signal.

3/4.1.1 BORATION CONTROL

3/4.1.1.1 and 3/4.1.1.2 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS T_{avg}. The most restrictive condition occurs at EOL, with T_{avg} at no load operating temperature, and is associated with a postulated steam line break accident and resulting uncontrolled RCS cooldown. In the analysis of this accident, the minimum SHUTDOWN MARGIN specified in the CORE OPERATING LIMITS REPORT is initially required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN required by Specification 3.1.1.1 is based upon this limiting condition and is consistent with FSAR accident analysis assumptions. For earlier periods during the fuel cycle, this value is conservative. With $T_{avg} \leq 200°F$, the reactivity transients resulting from any postulated accident are minimal and the reduced SHUTDOWN MARGIN specified in the CORE OPERATING LIMITS REPORT provides adequate protection.

3/4.1.1.3 BORON DILUTION

A minimum flow rate of at least 1000 GPM provides adequate mixing, prevents stratification and ensures that reactivity changes will be gradual during reductions in Reactor Coolant System boron concentration. The 1000 GPM limit is the minimum required shutdown cooling flow to satisfy the boron dilution accident analysis. This 1000 GPM flow is an analytical limit. Plant operating procedures maintain the minimum shutdown cooling flow at a higher value to accommodate flow measurement uncertainties. While the plant is operating in reduced inventory operations, plant operating procedures also specify an upper flow limit to prevent vortexing in the shutdown cooling system. A flow rate of at least 1000 GPM will circulate the full Reactor Coolant System volume in approximately 90 minutes. With the RCS in mid-loop operation, the Reactor Coolant System volume will circulate in approximately 25 minutes. The reactivity change rate associated with reductions in Reactor Coolant System boron concentration will be within the capability for operator recognition and control.

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3/4.1.1.4 MODERATOR TEMPERATURE COEFFICIENT (MTC)

The limitations on MTC are provided to ensure that the assumptions used in the accident and transient analyses remain valid through each fuel cycle. The surveillance requirements for measurement of the MTC during each fuel cycle are adequate to confirm the MTC value since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup. The confirmation that the measured MTC value is within its limit provides assurance that the coefficient will be maintained within acceptable values throughout each fuel cycle.

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A maximum of two charging pumps capable of injecting into the RCS when RCS cold leg temperature is < 300°F ensures that the maximum inadvertent dilution flow rate assumed in the boron dilution analysis is not exceeded.

A charging pump can be considered to be not capable of injecting into the RCS by use of any of the following methods and the appropriate administrative controls.

1. Placing the motor circuit breaker in the open position.

2. Removing the charging pump motor overload heaters from the charging pump circuit.

3. Removing the charging pump motor controller from the motor control center.

3/4.1.1.5 MINIMUM TEMPERATURE FOR CRITICALITY

The MTC is expected to be slightly negative at operating conditions. However, at the beginning of the fuel cycle, the MTC may be slightly positive at operating conditions and since it will become more positive at lower temperatures, this specification is provided to restrict reactor operation when T_{avg} is significantly below the normal operating temperature.

3/4.1.2 DELETED ~~BORATION SYSTEMS~~

~~The boron injection system ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid pumps, and 5) an emergency power supply from OPERABLE diesel generators.~~

~~With the RCS average temperature above 200°F, a minimum of two separate and redundant boron injection flowpaths are provided to ensure single functional capability in the event an assumed failure of a pump or valve renders one of the flowpaths inoperable. Redundant flow paths from the Boric Acid Storage Tanks are achieved through Boric Acid Pumps, gravity feed lines and Charging Pumps. Redundant flow paths from the Refueling Water Storage Tank are achieved through Charging Pump flow path guaranteed by Technical Specification 3.1.2.2 and the HPSI flow path guaranteed by Technical Specification 3.5.2 and 3.5.3. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.~~

~~The minimum boration capability is sufficient to provide a SHUTDOWN MARGIN within the limits specified in the CORE OPERATING LIMITS REPORT at all temperatures above 200°F. The maximum boration capability requirement occurs at EOL from full power equilibrium xenon conditions and requires an equivalent of 4900 gallons of 3.5% boric acid solution from the boric acid tanks plus 15,000 gallons of 1720 ppm borated water from the refueling water storage tank. The refueling water storage tank can also be used alone by feed-and-bleed using well under the 370,000 gallons of 1720 ppm borated water required.~~

~~The requirements for a minimum contained volume of 370,000 gallons of borated water in the refueling water storage tank ensures the capability for borating the RCS to the desired level. The specified quantity of borated water is consistent with the ECCS requirements of Specification 3.5.4. Therefore, the larger volume of borated water is specified here too.~~

3/4.1.2 BORATION SYSTEMS (Continued)

The analysis to determine the boration requirements assumed that the Reactor Coolant System is borated concurrently with cooldown. In the limiting situation when letdown is not available, the cooldown is assumed to be initiated within 26 hours and cooldown to 220°F, is completed in the next 28 hours.

With the RCS temperature below 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity change in the event the single injection system becomes inoperable. The MODES 5 and 6 action requirement to suspend positive reactivity additions does not preclude completion of actions to establish a safe conservative plant condition, or to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN.

The boron capability required below 200°F is based upon providing a SHUTDOWN MARGIN within the limit specified in the CORE OPERATING LIMITS REPORT at 140°F after xenon decay. This condition requires either 3750 gallons of 2.5% boric acid solution from the boric acid tanks or 57,300 gallons of 1720 ppm borated water from the refueling water storage tank.

The maximum boron concentration requirement (3.5%) and the minimum temperature requirement (55°F) for the Boric Acid Storage Tank ensures that boron does not precipitate in the Boric Acid System. The daily surveillance requirement provides sufficient assurance that the temperature of the tank will be maintained higher than 55°F at all times.

A minimum boron concentration of 1720 ppm is required in the RWST at all times in order to satisfy safety analysis assumptions for boron dilution incidents and other transients using the RWST as a borated water source as well as the analysis assumption to determine the boration requirement to ensure adequate shutdown margin.

A maximum of two charging pumps capable of injecting into the RCS when RCS temperature is less than 300°F, ensures that the maximum inadvertent dilution flow rate as assumed in the boron dilution analysis is 88 gallons per minute.

A charging pump can be considered to be not capable of injecting into the RCS by use of any of the following methods and the appropriate administrative controls.

1. Placing the motor circuit breaker in the open position.
2. Removing the charging pump motor overload heaters from the charging pump circuit.
3. Removing the charging pump motor controller from the motor control center.

3/4.1.2 BORATION SYSTEMS (Continued)

The provision in Specification 3.1.2.4 that Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 4 is provided to allow for closing the motor circuit breaker and subsequent testing of the inoperable charging pump. Specification 3.4.9.3, which is applicable to MODES 5 and 6, requires that one charging pump be capable of injecting into the RCS at or below 190°F. Specification 3.1.2.4 requires that at least two charging pumps be OPERABLE in MODES 1, 2, 3, and 4. The exception from Specification 3.0.4 and 4.0.4 will allow Millstone Unit No. 2 to enter into MODE 4 and test the inoperable charging pump and declare it OPERABLE.

Surveillance Requirement (SR) 4.1.2.2.a requires all testable power operated valves in each required flow path to be exercised through one complete cycle at least once per 7 days. This surveillance requirement does not apply to 2-CS-13.1B. This motor operated valve is in the RWST supply to the charging pumps and the RWST supply to the Facility 2 emergency core cooling pumps (HPSI, LPSI, and CS). It is key-locked in the open position during normal plant operation. This valve is not in the boration flow path when it is in the normal locked open position, and it is a non-testable valve in Modes 1 through 4 for boration flow path verification due to the increase in plant risk with no offsetting improvement in plant safety. Therefore, it is not necessary to stroke this valve at least once per 7 days for the boration flow path verification required by SR 4.1.2.2.a. However, for additional assurance, 2-CS-13.1B should be verified locked open when performing SR 4.1.2.2.a.

3/4.1.3 MOVEABLE CONTROL ASSEMBLIES

The specifications of this section ensure that (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of a CEA ejection accident are limited to acceptable levels.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met.

The ACTION statements applicable to an immovable or untrippable CEA and to a large misalignment ($\geq$ 20 steps) of two or more CEAs, require a prompt shutdown of the reactor since either

3/4.5.1 SAFETY INJECTION TANKS (continued)

within 6 hours and pressurizer pressure reduced to < 1750 psia within 12 hours. The allowed completion times are reasonable, based on operating experience, to reach the required plant condition from full power conditions in an orderly manner and without challenging plant systems.

If more than one SIT is inoperable, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

LCO 3.5.1.a requires that each reactor coolant system safety injection tank shall be OPERABLE with the isolation valve open and the power to the valve operator removed.

This is to ensure that the valve is open and cannot be inadvertently closed. To meet LCO 3.5.1.a requirements, the valve operator is considered to be the valve motor and not the motor control circuit. Removing the closing coil while maintaining the breaker closed meets the intent of the Technical Specification by ensuring that the valve cannot be inadvertently closed.

Removing the closing coil and verifying that the closing coil is removed (Per SR 4.5.1.e) meets the Technical Specification because it prevents energizing the valve operator to position the valve in the close direction.

Opening the breaker, in lieu of removing the closing coil, to remove power to the valve operator is not a viable option since:

1. Millstone Unit 2 Safety Evaluation Report (SER) Docket No. 50-336, dated May 10, 1974, requires two independent means of position indication.

2. Surveillance Requirement 4.5.1.a requires the control/indication circuit to be energized, to verify that the valve is open.

3. Technical Specification 3/4.3.2, Engineered Safety Feature Actuation System Instrumentation, requires these valves to open on a SIAS signal.

Opening the breaker would eliminate the ability to satisfy the above three items.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two separate and independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the safety injection tanks is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward.

~~Limiting Condition for Operation (LCO) 3.5.2.d, which requires a separate and independent OPERABLE flow path from an OPERABLE Boric Acid Storage Tank to one OPERABLE charging pump, is satisfied when the requirements of Technical Specification 3.1.2.8.a are met.~~

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Each Emergency Core Cooling System (ECCS) subsystem required by Technical Specification 3.5.2 for design basis accident mitigation includes an OPERABLE high pressure safety injection (HPSI) pump and a low pressure safety injection (LPSI) pump. Each of these pumps require an OPERABLE flow path capable of taking suction from the refueling water storage tank (RWST) on a safety injection actuation signal (SIAS). Upon depletion of the inventory in the RWST, as indicated by the generation of a Sump Recirculation Actuation Signal (SRAS), the suction for the HPSI pumps will automatically be transferred to the containment sump. The SRAS will also secure the LPSI pumps. The ECCS subsystems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) as design basis accident mitigation equipment.

Flow from the charging pumps is no longer required for design basis accident mitigation. The loss of coolant accident analysis has been revised and no credit is taken for charging pump flow. As a result, the charging pumps no longer meet the first three criteria of 10 CFR 50.36(c)(2)(ii) as design basis accident mitigation equipment required to be controlled by Technical Specifications. However, the charging pumps are risk significant equipment (10 CFR 50.36(c)(2)(ii) Criterion 4) due to their role in the mitigation of two beyond design basis events, Anticipated Transient Without Scram (ATWS) and Complete Loss of Secondary Heat Sink. Mitigation of these events relies on the charging pumps to provide flow to the RCS. Therefore, requirements for charging pump operability will be retained in Technical Specification 3.5.2 to ensure the charging pumps will be available to supply borated water from the RWST to the Reactor Coolant System.

The requirements for automatic actuation of the charging pumps and the associated boration system components (boric acid pumps, gravity feed valves, boric acid flow path valves) which align the boric acid storage tanks to the charging pump suction on a SIAS have been relocated to the Technical Requirements Manual. These relocated requirements do not affect the OPERABILITY of the charging pumps for Technical Specification 3.5.2.

Surveillance Requirement 4.5.2.a verifies the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths to provide assurance that the proper flow paths will exist for ECCS operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.5.2.b verifies proper valve position to ensure that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removing power to the valve operator ensures that the valves cannot be inadvertently misaligned or change position as the result of an active failure. A 31 day frequency is considered reasonable in view of other administrative controls ensuring that a mispositioned valve is an unlikely possibility.

Surveillance Requirements 4.5.2.c and 4.5.2.d, which address periodic surveillance testing of the ECCS pumps (high pressure and low pressure safety injection pumps) to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirement 4.5.2.e, which addresses periodic surveillance testing of the charging pumps to detect gross degradation caused by hydraulic component problems, is required by Section XI of the ASME Code. For positive displacement pumps, this type of testing may be accomplished by measuring the pump flow at a specified discharge pressure, consistent with the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test point is greater than or equal to the performance assumed for mitigation of the beyond design basis events. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirements 4.5.2.f, 4.5.2.g, and 4.5.2.h demonstrate that each automatic ECCS flow path valve actuates to the required position on an actual or simulated actuation signal (SIAS or SRAS), that each ECCS pump starts on receipt of an actual or simulated actuation signal (SIAS), and that the LPSI pumps stop on receipt of an actual or simulated actuation signal (SRAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage, and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Surveillance Requirement 4.5.2.i verifies the high and low pressure safety injection valves listed in Table 4.5-1 will align to the required positions on an SIAS for proper ECCS performance. The safety injection valves have stops to position them properly so that flow is restricted to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

Surveillance Requirement 4.5.2.j addresses periodic inspection of the containment sump to ensure that it is unrestricted and stays in proper operating condition. The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage, on the need to have access to the location, and on the potential for unplanned transients if the surveillance were performed with the reactor at power. This frequency is sufficient to detect abnormal degradation and is confirmed by operating experience.

Surveillance Requirement 4.5.2.k verifies that the Shutdown Cooling (SDC) System open permissive interlock is OPERABLE to ensure the SDC suction isolation valves are prevented from being remotely opened when RCS pressure is at or above the SDC suction design pressure of 300 psia. The suction piping of the SDC pumps (low pressure safety injection pumps) is the SDC component with the limiting design pressure rating. The interlock provides assurance that double isolation of the SDC System from the RCS is preserved whenever RCS pressure is at or above the design pressure. The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

Only one ECCS subsystem is required by Technical Specification 3.5.3 for design basis accident mitigation. This ECCS subsystem requires one OPERABLE HPSI pump and an OPERABLE flow path capable of taking suction from the RWST on a SIAS. Upon depletion of the inventory in the RWST, as indicated by the generation of a SRAS, the suction for the HPSI pump will automatically be transferred to the containment sump. This ECCS subsystem satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) as design basis accident mitigation equipment.

Surveillance Requirement 4.5.3.1 specifies the surveillance requirements of Technical Specification 3.5.2 that are required to demonstrate that the required ECCS subsystem of Technical Specification 3.5.3 is OPERABLE. The required ECCS subsystem of Technical Specification 3.5.3 does not include any LPSI components. LPSI components are not required when Technical Specification 3.5.3 is applicable to allow the LPSI components to be used for SDC System operation.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

Technical Specification 3.1.2.8.a provides the requirements for an OPERABLE Boric Acid Storage Tank (BAST) and flow paths to the charging pump suction header. Combustion Engineering Calculation No. N-PEC-39, "Charging Pump NPSH Check-Millstone #2," dated September 20, 1973, shows that there is adequate suction head for the charging pumps for the four (4) different cases in which all three charging pumps can take suction. These cases are as follows:

- Suction from VCT (assumed 5% level in VCT)
- Suction from BASTs (gravity feed, assumed 0% level in one BAST)
- Suction from BASTs (boric acid pumps, assumed 0% level in one BAST)
- Suction from the Refueling Water Storage Tank (RWST) (assumed 10% level in the RWST)

The BASTs are passive components which supply concentrated boric acid to the Reactor Coolant System (RCS) via the charging system. Passive components are not subject to single active failures. Two redundant flow paths are provided to the charging system from the BASTs. These include the following:

1. A gravity feed flow path from either BAST through motor-operated valves (either 2-CH-508 or 2-CH-509) to the common suction header to the charging pumps.

   Both of these parallel valves obtain their electrical power from Facility Z-1. To ensure that the Volume Control Tank (VCT) will not prevent the gravity feed flow path from delivering boric acid to the charging pump suction, the VCT isolation valve (2-CH-501) receives a close signal upon SIAS. Valve 2-CH-501 is also electrically powered from a Facility Z-I source.

2. Separate parallel suction line flow path from the BASTs through the boric acid pumps.

   Flow from the discharge of the pumps is directed to the suction header for the charging pumps via a single special line through motor-operated valve 2-CH-514. This valve, plus the valves to isolate the boric acid pump recirculation (air operated valves 2-CH-510 and 2-CH-511), receive open and close signals upon SIAS, respectively. All of this equipment in the second redundant flow path obtains its electrical power from Facility Z-2.

Protection against a single active failure (i.e., failure of a pump or valve) is provided by the requirement to have a minimum of two (2) separate and redundant boron injection flow paths to the charging pumps (per Bases 3/4.1.2).

The ECCS leak rate surveillance requirements assure that the leakage rates assumed for the system outside containment during the recirculation phase will not be exceeded.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the accident analyses are

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3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

met and that subsystem OPERABILITY is maintained. The purpose of the HPSI and LPSI pumps differential pressure test on recirculation ensures that the pump(s) have not degraded to a point where the accident analysis would be adversely impacted.

The acceptance criteria for the HPSI pumps Technical Specification Surveillance Requirement (SR 4.5.2.a.1.b), a minimum pump recirculation flow test, was developed assuming a 5% degraded pump using the manufacturer curves. The associated accident analyses assume a HPSI flow that represents 5% degradation. Early delivery of HPSI pump flow, at high head conditions similar to those established when the pump is on recirculation flow, is an important assumption in the accident analyses. Flow measurement instrument inaccuracy has been accounted for in the design basis hydraulic analysis. Pressure measurement instrument inaccuracy will be accounted for in the acceptance criteria contained in the surveillance procedure for SR 4.5.2.a.1.b. Pressure measurement instrument inaccuracy is not reflected in the Technical Specification acceptance criteria.

The acceptance criteria for the LPSI pumps Technical Specification Surveillance Requirement (SR 4.5.2.a.2.b) was developed assuming a 10% degraded pump from the actual pump curves. The associated accident analyses assume a LPSI flow that represents 10% degradation. For the limiting large break loss of coolant accident (LBLOCA) analysis case, the analysis does not credit LPSI flow following the safety injection actuation signal until after a time delay which simulates the time for the emergency diesel generators to start and load. After this delay, the Reactor Coolant System (RCS) has depressurized well below the shutoff head of the LPSI pumps. At this low RCS pressure, the operating point of the pumps is significantly greater than minimum recirculation flow. For boron precipitation control following a loss of coolant accident, the LPSI pump is credited with providing hot leg injection flow. The operating point for the LPSI pumps during hot leg injection is also greater than minimum recirculation flow. Flow measurement instrument inaccuracy has been accounted for in the design basis hydraulic analysis. Pressure measurement instrument inaccuracy will be applied and controlled by the surveillance procedures when verifying pump performance in the flow ranges credited in the accident analyses. No correction for pressure measurement instrument inaccuracy will be applied to minimum recirculation flow type test data since this portion of the curve is not credited in the accident analyses. Pressure measurement instrumentation inaccuracy is not reflected in either Technical Specification SR 4.5.2.a.2.b, or in the associated surveillance procedure.

The purpose of the ECCS throttle valve surveillance requirements is to provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

~~Verification of the correct position for the mechanical and/or electrical valve stops can be performed by either of the following methods:~~

~~1. Visually verify the valve opens to the designated throttled position; or~~

~~2. Manually position the valve to the designated throttled position and verify that the valve does not move when the applicable valve control switch is placed to "OPEN."~~

In MODE 4 the automatic safety injection signal generated by low pressurizer pressure and high containment pressure and the automatic sump recirculation actuation signal generation by low refueling water storage tank level are not required to be OPERABLE. Automatic actuation in MODE 4 is not required because adequate time is available for plant operators to evaluate plant conditions and respond by manually operating engineered safety features components. Since the manual actuation (trip pushbuttons) portion of the safety injection and sump recirculation actuation signal generation is required to be OPERABLE in MODE 4, the plant operators can use the manual trip pushbuttons to rapidly position all components to the required accident position. Therefore, the safety injection and sump recirculation actuation trip pushbuttons satisfy the requirement for generation of safety injection and sump recirculation actuation signals in MODE 4.

In MODE 4, the OPERABLE HPSI pump is not required to start automatically on a SIAS. Therefore, the pump control switch for this OPERABLE pump may be placed in the pull-to-lock position without affecting the OPERABILITY of the pump. This will prevent the pump from starting automatically, which could result in overpressurization of the Shutdown Cooling System. Only one HPSI pump may be OPERABLE in MODE 4 with RCS temperatures less than or equal to 275°F due to the restricted relief capacity with Low-Temperature Overpressure Protection System. To reduce shutdown risk by having additional pumping capacity readily available, a HPSI pump may be made inoperable but available at short notice by shutting its discharge valve with the key lock on the control panel.

The provision in Specification 3.5.3 that Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 4 is provided to allow for connecting the HPSI pump breaker to the respective power supply or to remove the tag and open the discharge valve, and perform the subsequent testing necessary to declare the inoperable HPSI pump OPERABLE. Specification 3.4.9.3 requires all HPSI pumps to be not capable of injecting into the RCS when RCS temperature is at or below 190°F. Once RCS temperature is above 190°F one HPSI pump can be capable of injecting into the RCS. However, sufficient time may not be available to ensure one HPSI pump is OPERABLE prior to entering MODE 4 as required by Specification 3.5.3. Since Specifications 3.0.4 and 4.0.4 prohibit a MODE change in this situation, this exemption will allow Millstone Unit No. 2 to enter MODE 4, take the steps necessary to make the HPSI pump capable of injecting into the RCS, and then declare the pump OPERABLE. If it is necessary to use this exemption during plant heatup, the appropriate action statement of Specification 3.5.3 should be entered as soon as MODE 4 is reached.

3/4.5.4 REFUELING WATER STORAGE TANK (RWST)

The OPERABILITY of the RWST as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that 1) sufficient water is available within containment to permit recirculation cooling flow to the core, and 2) after a LOCA the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes. Small break LOCAs assume that all control rods are inserted, except for the control element assembly (CEA) of highest worth, which remains withdrawn from the core. Large break LOCAs assume that all CEAs remain withdrawn from the core.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses. ~~The leak rate surveillance requirements assure that the leakage assumed for the system outside containment during the recirculation phase will not be exceeded.~~

The OPERABILITY of the containment cooling system ensures that 1) the containment air temperature will be maintained within limits during normal operation, and 2) adequate heat removal capacity is available when operated in conjunction with the containment spray system during post-LOCA conditions.

To be OPERABLE, the two trains of the containment spray system shall be capable of taking a suction from the refueling water storage tank on a containment spray actuation signal and automatically transferring suction to the containment sump on a sump recirculation actuation signal. Each containment spray train flow path from the containment sump shall be via an OPERABLE shutdown cooling heat exchanger.

The containment cooling system consists of two containment cooling trains. Each containment cooling train has two containment air recirculation and cooling units. For the purpose of applying the appropriate action statement, the loss of a single containment air recirculation and cooling unit will make the respective containment cooling train inoperable.

Either the containment spray system or the containment cooling system is sufficient to mitigate a loss of coolant accident. The containment spray system is more effective than the containment cooling system in reducing the temperature of superheated steam inside containment following a main steam line break. Because of this, the containment spray system is required to mitigate a main steam line break accident inside containment. In addition, the containment spray system provides a mechanism for removing iodine from the containment atmosphere. Therefore, at least one train of containment spray is required to be OPERABLE when pressurizer pressure is ≥ 1750 psia, and the allowed outage time for one train of containment spray reflects the dual function of containment spray for heat removal and iodine removal.

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~~The Technical Specification Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the accident analysis are met and the subsystem OPERABILITY is maintained. The purpose of the containment spray pumps differential pressure test on recirculation, Surveillance Requirement 4.6.1.1.a.2, ensures that the pumps have not degraded to a point where the accident analysis would be adversely impacted. The surveillance requirement acceptance criteria for the containment spray pumps was developed assuming a 5% degraded pump from the actual pump curves. Flow and pressure measurement instrument inaccuracies have been accounted for in the design basis hydraulic analysis. It is not necessary to account for either flow or pressure measure instrument inaccuracy in the acceptance criteria contained in the surveillance procedure. Flow and~~

Surveillance Requirement 4.6.2.1.1.a verifies the correct alignment for manual, power operated, and automatic valves in the Containment Spray System flow paths to provide assurance that the proper flow paths will exist for containment spray operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.6.2.1.1.b, which addresses periodic surveillance testing of the containment spray pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirements 4.6.2.1.1.c and 4.6.2.1.1.d demonstrate that each automatic containment spray valve actuates to the required position on an actual or simulated actuation signal (CSAS or SRAS), and that each containment spray pump starts on receipt of an actual or simulated actuation signal (CSAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Surveillance Requirement 4.6.2.1.1.e demonstrates that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. This surveillance is normally performed by blowing low pressure air or smoke through test connections with the containment spray inlet valves closed and the spray header drained of any solution. Due to the passive design of the nozzles, a test at 10 year intervals is considered adequate to detect obstruction of the spray nozzles.

Surveillance Requirement 4.6.2.1.2.a demonstrates that each containment air recirculation and cooling unit can be operated in slow speed for ≥ 15 minutes to ensure OPERABILITY and that all associated controls are functioning properly. It also ensures fan or motor failure can be detected and corrective action taken. The 31 day frequency considers the known reliability of the fan units and controls, the two train redundancy available, and the low probability of a significant degradation of the containment air recirculation and cooling unit occurring between surveillances. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.6.2.1.2.b demonstrates a cooling water flow rate of ≥ 500 gpm to each containment air recirculation and cooling unit to provide assurance a cooling water flow path through the cooling unit is available. The 31 day frequency considers the known reliability of the cooling water system, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.6.2.1.2.c demonstrates that each containment air recirculation and cooling unit starts on receipt of an actual or simulated actuation signal (SIAS). The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

pressure measurement instrument inaccuracies are already reflected in the Technical Specification acceptance criteria.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The Technical Requirements Manual contains the list of containment isolation valves (except the containment air lock and equipment hatch). Any changes to this list will be reviewed under 10CFR50.59 and approved by the committee(s) as described in the NUQAP Topical Report.

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The containment isolation valves are used to close all fluid (liquid and gas) penetrations not required for operation of the engineered safety feature systems, to prevent the leakage of radioactive materials to the environment. The fluid penetrations which may require isolation after an accident are categorized as Type P, O, or N. The penetration types are listed with the containment isolation valves in the Technical Requirements Manual.

Type P penetrations are lines that connect to the reactor coolant pressure boundary (Criterion 55 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

Type O penetrations are lines that are open to the containment internal atmosphere (Criterion 56 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

Type N penetrations are lines that neither connect to the reactor coolant pressure boundary nor are open to the containment internal atmosphere, but do form a closed system within the containment structure (Criterion 57 of 10CFR50, Appendix A). These lines are provided with single containment isolation valves outside containment. These valves are either remotely operated or locked closed manual valves.

Locked or sealed closed containment isolation valves may be opened on an intermittent basis provided appropriate administrative controls are established. The position of the NRC concerning acceptable administrative controls is contained in Generic Letter 91-08, "Removal of Component Lists from Technical Specifications," and includes the following considerations:

(1) stationing an operator, who is in constant communication with the control room, at the valve controls,

(2) instructing this operator to close these valves in an accident situation, and

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

(3) assuring that environmental conditions will not preclude access to close the valve and that this action will prevent the release of radioactivity outside the containment.

The appropriate administrative controls, based on the above considerations, to allow locked or sealed closed containment isolation valves to be opened are contained in the procedures that will be used to operate the valves. Entries should be placed in the Shift Manager Log when these valves are opened and closed. However, it is not necessary to log into any Technical Specification Action Statement for these valves, provided the appropriate administrative controls have been established.

If a locked or sealed closed containment isolation valve is opened while operating in accordance with Abnormal or Emergency Operating Procedures (AOPs and EOPs), it is not necessary to establish a dedicated operator. The AOPs and EOPs provide sufficient procedural control over the operation of the containment isolation valves.

Opening a locked or sealed closed containment isolation valve bypasses a plant design feature that prevents the release of radioactivity outside the containment. Therefore, this should not be done frequently, and the time the valve is opened should be minimized. As a general guideline, a locked or sealed closed containment isolation valve should not be opened longer than the time allowed to restore the valve to OPERABLE status, as stated in the action statement for LCO 3.6.3.1 "Containment Isolation Valves."

A discussion of the appropriate administrative controls for the containment isolation valves, that are expected to be opened during operation in MODES 1 through 4, is presented below.

Manual containment isolation valve 2-SI-463, safety injection tank (SIT) recirculation header stop valve, is opened to fill or drain the SITs and for Shutdown Cooling System (SDC) boron equalization. While 2-SI-463 is open, a dedicated operator, in continuous communication with the control room, is required.

When SDC is initiated, SDC suction isolation remotely operated valves 2-SI-652 and 2-SI-651 (inside containment isolation valve) and manual valve 2-SI-709 (outside containment isolation valve) are opened. 2-SI-651 is normally operated from the control room. While in Modes 1, 2 or 3, 2-SI-651 is closed with the closing and opening coils removed and stored to satisfy Appendix R requirements. It does not receive an automatic containment isolation closure signal, but is interlocked to prevent opening if Reactor Coolant System (RCS) pressure is greater than approximately 275 psia. When 2-SI-651 is opened from the control room, either one of the two required licensed (Reactor Operator) control room operators can be credited as the dedicated operator required for administrative control. It is not necessary to use a separate dedicated operator.

When valve 2-SI-709 is opened locally, a separate dedicated operator is not required to remain at the valve. 2-SI-709 is opened before 2-SI-651. Therefore, opening 2-SI-709 will not establish a connection between the RCS and the SDC System. Opening 2-SI-651 will connect the RCS and SDC System. If a problem then develops, 2-SI-651 can be closed from the control room.

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

The administrative controls for valves 2-SI-651 and 2-SI-709 apply only during preparations for initiation of SDC, and during SDC operations. They are acceptable because RCS pressure and temperature are significantly below normal operating pressure and temperature when 2-SI-651 and 2-SI-709 are opened, and these valves are not opened until shortly before SDC flow is initiated. The penetration flowpath can be isolated from the control room by closing either 2-SI-652 or 2-SI-651, and the manipulation of these valves, during this evolution, is controlled by plant procedures.

The pressurizer auxiliary spray valve, 2-CH-517, can be used as an alternate method to decrease pressurizer pressure, or for boron precipitation control following a loss of coolant accident. When this valve is opened from the control room, either one of the two required licensed (Reactor Operator) control room operators can be credited as the dedicated operator required for administrative control. It is not necessary to use a separate dedicated operator.

The exception for 2-CH-517 is acceptable because the fluid that passes through this valve will be collected in the Pressurizer (reverse flow from the Pressurizer to the charging system is prevented by check valve 2-CH-431), and the penetration associated with 2-CH-517 is open during accident conditions to allow flow from the charging pumps. Also, this valve is normally operated from the control room, under the supervision of the licensed control room operators, in accordance with plant procedures.

A dedicated operator is not required when opening remotely operated valves associated with Type N fluid penetrations (Criterion 57 of 10CFR50, Appendix A). Operating these valves from the control room is sufficient. The main steam isolation valves (2-MS-64A and 64B), atmospheric steam dump valves (2-MS-190A and 190B), and the containment air recirculation cooler RBCCW discharge valves (2-RB-28.2A-D) are examples of remotely operated containment isolation valves associated with Type N fluid penetrations.

MSIV bypass valves 2-MS-65A and 65B are remotely operated MOVs, but while in MODE 1, they are closed with power to the valve motors removed via lockable disconnect switches located at their respective MCC to satisfy Appendix "R" requirements.

Local operation of the atmospheric steam dump valves (2-MS-190A and 190B), or other remotely operated valves associated with Type N fluid penetrations, will require a dedicated operator in constant communication with the control room, except when operating in accordance with AOPs or EOPs. Even though these valves can not be classified as locked or sealed closed, the use of a dedicated operator will satisfy administrative control requirements. Local operation of these valves with a dedicated operator is equivalent to the operation of other manual (locked or sealed closed) containment isolation valves with a dedicated operator.

The main steam supplies to the turbine driven auxiliary feedwater pump (2-MS-201 and 2-MS-202) are remotely operated valves associated with Type N fluid penetrations. These valves are maintained open during power operation. 2-MS-201 is maintained energized, so it can be closed from the control room, if necessary, for containment isolation. However, 2-MS-202 is deenergized

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

open by removing power to the valve's motor via a lockable disconnect switch to satisfy Appendix R requirements. Therefore, 2-MS-202 cannot be closed immediately from the control room, if necessary, for containment isolation. The disconect switch key to power for 2-MS-202 is stored in the Unit 2 control room, and can be used to re-power the valve at the MCC; this will allow the valve to be closed from the control room. It is not necessary to maintain a dedicated operator at 2-MS-202 because this valve is already in the required accident position. Also, the steam that passes through this valve should not contain any radioactivity. The steam generators provide the barrier between the containment and the atmosphere. Therefore, it would take an additional structural failure for radioactivity to be released to the environment through this valve.

Steam generator chemical addition valves, 2-FW-15A and 2-FW-15B, are opened to add chemicals to the steam generators using the Auxiliary Feedwater System (AFW). When either 2-FW-15A or 2-FW-15B is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of these valves is expected during plant startup and shutdown.

The bypasses around the main steam supplies to the turbine driven auxiliary feedwater pump (2-MS-201 and 2-MS-202), 2-MS-458 and 2-MS-459, are opened to drain water from the steam supply lines. When either 2-MS-458 or 2-MS-459 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of these valves is expected during plant startup.

The containment station air header isolation, 2-SA-19, is opened to supply station air to containment. When 2-SA-19 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is only expected for maintenance activities inside containment.

The backup air supply master stop, 2-IA-566, is opened to supply backup air to 2-CH-517, 2-CH-518, 2-CH-519, 2-EB-88, and 2-EB-89. When 2-IA-566 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is only expected in response to a loss of the normal air supply to the valves listed.

The nitrogen header drain valve, 2-SI-045, is opened to depressurize the containment side of the nitrogen supply header stop valve, 2-SI-312. When 2-SI-045 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is only expected after using the high pressure nitrogen system to raise SIT nitrogen pressure.

The containment waste gas header test connection isolation valve, 2-GR-63, is opened to sample the primary drain tank for oxygen and nitrogen. When 2-GR-63 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is expected during plant startup and shutdown.

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

The upstream vent valves for the steam generator atmospheric dump valves, 2-MS-369 and 2-MS-371, are opened during steam generator safety valve set point testing to allow steam header pressure instrumentation to be placed in service. When either 2-MS-369 or 2-MS-371 is opened, a dedicated operator in continuous communication with the control room is required.

The determination of the appropriate administrative controls for these containment isolation valves included an evaluation of the expected environmental conditions. This evaluation has concluded environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

The containment purge supply and exhaust isolation valves are required to be sealed closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA or steam line break accident. Such a demonstration would require justification of the mechanical operability of the purge valves and consideration of the appropriateness of the electrical override circuits. Maintaining these valves closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system. The containment purge supply and exhaust isolation valves are sealed closed by removing power from the valves. This is accomplished by pulling the control power fuses for each of the valves. The associated fuse blocks are then locked. This is consistent with the guidance contained in NUREG-0737 Item II.E.4.2 and Standard Review Plan 6.2.4, "Containment Isolation System," Item II.f.

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS

The OPERABILITY of the auxiliary feedwater pumps ensures that the Reactor Coolant System can be cooled down to less than 300°F from normal operating conditions in the event of a total loss of off-site power.

Any single motor driven or steam driven pump has the required capacity to provide sufficient feedwater flow to remove reactor decay heat and reduce the RCS temperature to 300°F where the shutdown cooling system may be placed into operation for continued cooldown.

The Technical Specification Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the accident analysis are met and that subsystem OPERABILITY is maintained. The purpose of the auxiliary feedwater pumps differential pressure tests on recirculation, Surveillance Requirements 4.7.1.2.a.2.a and 4.7.1.2.a.2.b, is to ensure that the pumps have not degraded to a point where the accident analysis would be adversely impacted. The surveillance requirement acceptance criteria for the motor driven auxiliary feedwater pumps was developed assuming a 5% degraded pump from the actual pump curves. The surveillance requirement acceptance criteria for the turbine driven auxiliary feedwater pump was developed from high flow test data extrapolated to minimum recirculation flow, and can be adjusted to account for the affect on pump performance of variations in pump speed. Flow and pressure measurement instrument inaccuracies have not been accounted for in the design basis hydraulic analysis for the motor driven auxiliary feedwater pumps. Flow, pressure, and speed measurement instrument inaccuracies have not been accounted for in the design basis hydraulic analysis for the turbine driven auxiliary feedwater pump. Corrections for flow, pressure, and speed (turbine driven pump only) measurement instrument inaccuracies will be applied to test data taken when verifying pump performance in the flow ranges credited in the accident analyses. No corrections for flow, pressure, and speed (turbine driven pump only) measurement instrument inaccuracies will be applied to minimum recirculation flow type test data since this portion of the curve is not credited in the accident analyses. Corrections for flow, pressure, and speed (turbine driven pump only) measurement instrument inaccuracies are not reflected in the Technical Specification acceptance criteria.

The Auxiliary Feed Water (AFW) system is OPERABLE when the AFW pumps and flow paths required to provide AFW to the steam generators are OPERABLE. Technical Specification 3.7.1.2 requires three AFW pumps to be OPERABLE and provides ACTIONS to address inoperable AFW pumps. The AFW flow path requirements are separated into AFW pump suction flow path requirements, AFW pump discharge flow path to the common discharge header requirements, and common discharge header to the steam generators flow path requirements.

There are two AFW pump suction flow paths from the Condensate Storage Tank to the AFW pumps. One flow path to the turbine driven AFW pump, and one flow path to both motor driven AFW pumps. There are three AFW pump discharge flow paths to the common discharge header, one flow path from each of the three AFW pumps. There are two AFW discharge flow paths from the common discharge header to the steam generators, one flow path to each steam

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

generator. With 2-FW-44 open (normal position), the discharge from any AFW pump will be supplied to both steam generators through the associated AFW regulating valves.

A flow path may be considered inoperable as the result of closing a manual valve, failure of an automatic valve to respond correctly to an actuation signal, or failure of the piping. In the case of an inoperable automatic AFW regulating valve (2-FW-43A or B), flow path OPERABILITY can be restored by use of a dedicated operator stationed at the associated bypass valve (2-FW-56A or B) as directed by OP 2322. Failure of the common discharge header piping will cause both discharge flow paths to the steam generators to be inoperable.

An inoperable suction flow path to the turbine driven AFW pump will result in one inoperable AFW pump. An inoperable suction flow path to the motor driven AFW pumps will result in two inoperable AFW pumps. The ACTION requirements of Technical Specification 3.7.1.2 are applicable based on the number of inoperable AFW pumps.

An inoperable pump discharge flow path from an AFW pump to the common discharge header will cause the associated AFW pump to be inoperable. The ACTION requirements of Technical Specification 3.7.1.2 for one AFW pump are applicable for each affected pump discharge flow path.

AFW must be capable of being delivered to both steam generators for design basis accident mitigation. Certain design basis events, such as a main steam line break or steam generator tube rupture, require that the affected steam generator be isolated, and the RCS decay heat removal safety function be satisfied by feeding and steaming the unaffected steam generator. If a failure in an AFW discharge flow path from the common discharge header to a steam generator prevents delivery of AFW to a steam generator, then the design basis events may not be effectively mitigated. In this situation, the ACTION requirements of Technical Specification 3.0.3 are applicable and an immediate plant shutdown is appropriate.

Two inoperable AFW System discharge flow paths from the common discharge header to both steam generators will result in a complete loss of the ability to supply AFW flow to the steam generators. In this situation, all three AFW pumps are inoperable and the ACTION requirements of Technical Specification 3.7.1.2 are applicable. Immediate corrective action is required. However, a plant shutdown is not appropriate until a discharge flow path from the common discharge header to one steam generator is restored.

During quarterly surveillance testing of the turbine driven AFW pump, valve 2-CN-27A is closed and valve 2-CN-28 is opened to prevent overheating the water being circulated. In this configuration, the suction of the turbine driven AFW pump is aligned to the Condensate Storage Tank via the motor driven AFW pump suction flow path, and the pump minimum flow is directed to the Condensate Storage Tank by the turbine driven AFW pump suction path upstream of 2-CN-27A in the reverse direction. During this surveillance, the suction path to the motor driven AFW pump suction path

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

remains OPERABLE, and the turbine driven AFW suction path is inoperable. In this situation, the ACTION requirements of Technical Specification 3.7.1.2 for one AFW pump are applicable.

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3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available for cooldown of the Reactor Coolant System to less than 300°F in the event of a total loss of off-site power. The minimum water volume is sufficient to maintain the RCS at HOT STANDBY conditions for 10 hours with steam discharge to atmosphere. The contained water volume limit includes an allowance for water not usable due to discharge nozzle pipe elevation above tank bottom, plus an allowance for vortex formation.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction

Surveillance Requirement 4.7.1.2.a verifies the correct alignment for manual, power operated, and automatic valves in the Auxiliary Feedwater (AFW) System flow paths (water and steam) to provide assurance that the proper flow paths will exist for AFW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.7.1.2.b, which addresses periodic surveillance testing of the AFW pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements. This surveillance is modified to indicate that the test can be deferred for the steam driven AFW pump until suitable plant conditions are established. This deferral is required because steam pressure is not sufficient to perform the test until after MODE 3 is entered. However, the test, if required, must be performed prior to entering MODE 2.

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Surveillance Requirements 4.7.1.2.c and 4.7.1.2.d demonstrate that each automatic AFW valve actuates to the required position on an actual or simulated actuation signal (AFWAS) and that each AFW pump starts on receipt of an actual or simulated actuation signal (AFWAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program. These surveillances do not apply to the steam driven AFW pump and associated valves which are not automatically actuated.

Surveillance Requirement 4.7.1.2.e demonstrates the AFW System is properly aligned by verifying the flow path to each steam generator prior to entering MODE 2, after 30 cumulative days in MODE 5, MODE 6, or a defueled condition. OPERABILITY of the AFW flow paths must be verified before sufficient core heat is generated that would require operation of the AFW System during a subsequent shutdown. To further ensure AFW System alignment, the OPERABILITY of the flow paths is verified following extended outages to determine that no misalignment of valves has occurred. The frequency is reasonable, based on engineering judgement, and other administrative controls to ensure the flow paths are OPERABLE.

Docket No. 50-336
B18634

Attachment 4

Millstone Nuclear Power Station, Unit No. 2

License Basis Document Change Request 2-5-00
Boration, Emergency Core Cooling, Containment Spray and Cooling and Auxiliary Feedwater Systems
Retyped Pages

LIMITING CONDITIONS FOR OPERATION AND SURVILLANCE REQUIREMENTS

BASES

BORON DILUTION

LIMITING CONDITION FOR OPERATION

3.1.1.3 The following boron dilution restrictions shall be met:

a. The flow rate of reactor coolant through the core shall be ≥ 1000 gpm whenever a reduction in Reactor Coolant System boron concentration is being made.

b. A maximum of two charging pumps shall be capable of injecting into the Reactor Coolant System whenever the temperature of one or more of the Reactor Coolant System cold legs in < 300°F.

APPLICABILITY: ALL MODES.

ACTION:

a. With the flow rate of reactor coolant through the core < 1000 gpm, immediately suspend all operations involving a reduction in boron concentration of the Reactor Coolant System.

b. With more than two charging pumps capable of injecting into the Reactor Coolant System and the temperature of one or more of the Reactor Coolant System cold legs is < 300°F, take immediate action to comply with 3.1.1.3.b.

SURVEILLANCE REQUIREMENTS

4.1.1.3.1* The reactor coolant flow rate through the core shall be determined to be ≥ 1000 gpm prior to the start of and at least once per hour during a reduction in the Reactor Coolant System boron concentration by either:

a. Verifying at least one reactor coolant pump is in operation, or

b. Verifying that at least one low pressure safety injection pump is in operation and supplying ≥ 1000 gpm through the core.

4.1.1.3.2 One charging pump shall be demonstrated not capable of injecting into the Reactor Coolant System at least once per 12 hours whenever the temperature of one or more of the Reactor Coolant System cold legs is < 300°F.

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*When the plant is in MODE 1 or 2, reactor coolant pumps are required to be in operation. Therefore, Surveillance Requirement 4.1.1.3.1 does not have to be performed in MODES 1 and 2. This exception does not apply if operating in accordance with Special Test Exception 3.10.4.

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ECCS SUBSYSTEMS - $T_{avg} \geq 300°F$

LIMITING CONDITION FOR OPERATION

3.5.2 Two ECCS subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

*With pressurizer pressure ≥ 1750 psia.

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying each Emergency Core Cooling System manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.

b. At least once per 31 days by verifying that the following valves are in the indicated position with power to the valve operator removed:

Valve Number	Valve Function	Valve Position
2-SI-306	Shutdown Cooling Flow Control	Open**
2-SI-659	SRAS Recirc.	Open*
2-SI-660	SRAS Recirc.	Open*

* To be closed prior to recirculation following LOCA.
** Pinned and locked at preset throttle open position.

c. By verifying the developed head of each high pressure safety injection pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

d. By verifying the developed head of each low pressure safety injection pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

e. By verifying the delivered flow of each charging pump at the required discharge pressure is greater than or equal to the required flow when tested pursuant to Specification 4.0.5.

f. At least once per 18 months by verifying each Emergency Core Cooling System automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.

g. At least once per 18 months by verifying each high pressure safety injection pump and low pressure safety injection pump starts automatically on an actual or simulated actuation signal.

h. At least once per 18 months by verifying each low pressure safety injection pump stops automatically on an actual or simulated actuation signal.

i. By verifying the correct position of each electrical and/or mechanical position stop for each injection valve in Table 4.5-1.

1. Within 4 hours after completion of valve operations.

2. At least once per 18 months.

SURVEILLANCE REQUIREMENTS

j. At least once per 18 months by verifying through visual inspection of the containment sump that each Emergency Core Cooling System subsystem suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.

k. At least once per 18 months by verifying the Shutdown Cooling System open permissive interlock prevents the Shutdown Cooling System inlet isolation valves from being opened with an actual or simulated Reactor Coolant System pressure signal of $\geq$ 300 psia.

Table 4.5-1

ECCS INJECTION VALVES

1.	2-SI-617	"A" HPSI Header - Loop 1A Injection
2.	2-SI-627	"A" HPSI Header - Loop 1B Injection
3.	2-SI-637	"A" HPSI Header - Loop 2A Injection
4.	2-SI-647	"A" HPSI Header - Loop 2B Injection
5.	2-SI-616	"B" HPSI Header - Loop 1A Injection
6.	2-SI-626	"B" HPSI Header - Loop 1B Injection
7.	2-SI-636	"B" HPSI Header - Loop 2A Injection
8.	2-SI-646	"B" HPSI Header - Loop 2B Injection
9.	2-SI-615	LPSI Header - Loop 1A Injection
10.	2-SI-625	LPSI Header - Loop 1B Injection
11.	2-SI-635	LPSI Header - Loop 2A Injection
12.	2-SI-645	LPSI Header - Loop 2B Injection

ECCS SUBSYSTEMS - T_{avg} $\leq$ 300°F

LIMITING CONDITION FOR OPERATION

3.5.3 One high pressure safety injecton subsystem shall be OPERABLE.

NOTES

1. The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 4 for the high pressure safety injection pump that is inoperable pursuant to Specification 3.4.9.3 provided the high pressure safety injection pump is restored to OPERABLE status within 1 hour after entering MODE 4.

2. In MODE 4, the requirement for OPERABLE safety injection and sump recirculation actuation signals is satisfied by use of the safety injection and sump recirculation trip pushbuttons.

3. In MODE 4, the OPERABLE HPSI pump is not required to start automatically on a SIAS. Therefore, the pump control switch for this OPERABLE pump may be placed in the pull-to-lock position without affecting the OPERABILITY of this pump.

APPLICABILITY: MODES 3* and 4.

ACTION:

a. With no high pressure safety injection subsystem OPERABLE, restore at least one high pressure safety injection subsystem to OPERABLE status within one hour or be in COLD SHUTDOWN within the next 24 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The high pressure safety injection subsystem shall be demonstrated OPERABLE per the applicable portions of Surveillance Requirements of 4.5.2.a, 4.5.2.b, 4.5.2.c, 4.5.2.f, 4.5.2.g, 4.5.2.i, and 4.5.2.j.

* With pressurizer pressure < 1750 psia.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY AND COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two containment spray trains and two containment cooling trains, with each cooling train consisting of two containment air recirculation and cooling units, shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

Inoperable Equipment	Required Action
a. One containment spray train	a.1 Restore the inoperable containment spray train to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours.
b. One containment cooling train	b.1 Restore the inoperable containment cooling train to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.
c. One containment spray train AND One containment cooling train	c.1 Restore the inoperable containment spray train or the inoperable containment cooling train to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
d. Two containment cooling trains	d.1 Restore at least one inoperable containment cooling train to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
e. All other combinations	e.1 Enter LCO 3.0.3 immediately.

SURVEILLANCE REQUIREMENTS

4.6.2.1.1 Each containment spray train shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying each containment spray manual, power operated, and automatic valve in the spray train flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.

*The Containment Spray System is not required to be OPERABLE in MODE 3 if pressurizer pressure is < 1750 psia.

SURVEILLANCE REQUIREMENTS (Continued)

b. By verifying the developed head of each containment spray pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

c. At least once per 18 months by verifying each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.

d. At least once per 18 months by verifying each containment spray pump starts automatically on an actual or simulated actuation signal.

e. At least once per 10 years by verifying each spray nozzle is unobstructed.

4.6.2.1.2 Each containment air recirculation and cooling unit shall be demonstrated OPERABLE:

a. At least once per 31 days by operating each containment air recirulation and cooling unit in slow speed for $\geq$ 15 minutes.

b. At least once per 31 days by verifying each containment air recirculation and cooling unit cooling water flow rate is $\geq$ 500 gpm.

c. At least once per 18 months by verifying each containment air recirculation and cooling unit starts automatically on an actual or simulated actuation signal.

AUXILIARY FEEDWATER PUMPS

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three steam generator auxiliary feedwater pumps shall be OPERABLE with:

a. Two feedwater pumps capable of being powered from separate OPERABLE emergency busses, and

b. One feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With two auxiliary feedwater pumps inoperable be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible. Entry into an OPERATIONAL MODE or other specified condition under the provisions of Specification 3.0.4 shall not be made with three auxiliary feedwater pumps inoperable.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying each auxiliary feedwater manual, power operated, and automatic valve in each water flow path and in each steam supply flow path to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.

b. By verifying the developed head of each auxiliary feedwater pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. (Not required to be performed for the steam turbine driven auxiliary feedwater pump until 24 hours after reaching 800 psig in the steam generators. The provisions of Specification 4.0.4 are not applicable to the steam turbine driven auxiliary feedwater pump for entry into MODE 3).

c. At least once per 18 months by verifying each auxiliary feedwater automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position, as designed, on an actual or simulated actuation signal.

SURVEILLANCE REQUIREMENTS

d. At least once per 18 months by verifying each auxiliary feedwater pump starts automatically, as designed, on an actual or simulated actuation signal.

e. By verifing the proper alignment of the required auxiliary feedwater flow paths by verifying flow from the condensate storage tank to each steam generator prior to entering MODE 2 whenever the unit has been in MODE 5, MODE 6, or defueled for a cumulative period of greater than 30 days.

3/4.1.1 BORATION CONTROL

3/4.1.1.1 and 3/4.1.1.2 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS T_{avg}. The most restrictive condition occurs at EOL, with T_{avg} at no load operating temperature, and is associated with a postulated steam line break accident and resulting uncontrolled RCS cooldown. In the analysis of this accident, the minimum SHUTDOWN MARGIN specified in the CORE OPERATING LIMITS REPORT is initially required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN required by Specification 3.1.1.1 is based upon this limiting condition and is consistent with FSAR accident analysis assumptions. For earlier periods during the fuel cycle, this value is conservative. With $T_{avg} \leq 200°F$, the reactivity transients resulting from any postulated accident are minimal and the reduced SHUTDOWN MARGIN specified in the CORE OPERATING LIMITS REPORT provides adequate protection.

3/4.1.1.3 BORON DILUTION

A minimum flow rate of at least 1000 GPM provides adequate mixing, prevents stratification and ensures that reactivity changes will be gradual during reductions in Reactor Coolant System boron concentration. The 1000 GPM limit is the minimum required shutdown cooling flow to satisfy the boron dilution accident analysis. This 1000 GPM flow is an analytical limit. Plant operating procedures maintain the minimum shutdown cooling flow at a higher value to accommodate flow measurement uncertainties. While the plant is operating in reduced inventory operations, plant operating procedures also specify an upper flow limit to prevent vortexing in the shutdown cooling system. A flow rate of at least 1000 GPM will circulate the full Reactor Coolant System volume in approximately 90 minutes. With the RCS in mid-loop operation, the Reactor Coolant System volume will circulate in approximately 25 minutes. The reactivity change rate associated with reductions in Reactor Coolant System boron concentration will be within the capability for operator recognition and control.

A maximum of two charging pumps capable of injecting into the RCS when RCS cold leg temperature is < 300°F ensures that the maximum inadvertent dilution flow rate assumed in the boron dilution analysis is not exceeded.

A charging pump can be considered to be not capable of injecting into the RCS by use of any of the following methods and the appropriate administrative controls.

1. Placing the motor circuit breaker in the open position.
2. Removing the charging pump motor overload heaters from the charging pump circuit.
3. Removing the charging pump motor controller from the motor control center.

3/4.1.1.4 MODERATOR TEMPERATURE COEFFICIENT (MTC)

The limitations on MTC are provided to ensure that the assumptions used in the accident and transient analyses remain valid through each fuel cycle. The surveillance requirements for measurement of the MTC during each fuel cycle are adequate to confirm the MTC value since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup. The confirmation that the measured MTC value is within its limit provides assurance that the coefficient will be maintained within acceptable values throughout each fuel cycle.

3/4.1.1.5 MINIMUM TEMPERATURE FOR CRITICALITY

The MTC is expected to be slightly negative at operating conditions. However, at the beginning of the fuel cycle, the MTC may be slightly positive at operating conditions and since it will become more positive at lower temperatures, this specification is provided to restrict reactor operation when T_{avg} is significantly below the normal operating temperature.

3/4.1.2 DELETED

3/4.1.3 MOVEABLE CONTROL ASSEMBLIES

The specifications of this section ensure that (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of a CEA ejection accident are limited to acceptable levels.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met.

The ACTION statements applicable to an immovable or untrippable CEA and to a large misalignment ($\geq$ 20 steps) of two or more CEAs, require a prompt shutdown of the reactor since either

3/4.5.1 SAFETY INJECTION TANKS (continued)

within 6 hours and pressurizer pressure reduced to < 1750 psia within 12 hours. The allowed completion times are reasonable, based on operating experience, to reach the required plant condition from full power conditions in an orderly manner and without challenging plant systems.

If more than one SIT is inoperable, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

LCO 3.5.1.a requires that each reactor coolant system safety injection tank shall be OPERABLE with the isolation valve open and the power to the valve operator removed.

This is to ensure that the valve is open and cannot be inadvertently closed. To meet LCO 3.5.1.a requirements, the valve operator is considered to be the valve motor and not the motor control circuit. Removing the closing coil while maintaining the breaker closed meets the intent of the Technical Specification by ensuring that the valve cannot be inadvertently closed.

Removing the closing coil and verifying that the closing coil is removed (Per SR 4.5.1.e) meets the Technical Specification because it prevents energizing the valve operator to position the valve in the close direction.

Opening the breaker, in lieu of removing the closing coil, to remove power to the valve operator is not a viable option since:

1. Millstone Unit 2 Safety Evaluation Report (SER) Docket No. 50-336, dated May 10, 1974, requires two independent means of position indication.

2. Surveillance Requirement 4.5.1.a requires the control/indication circuit to be energized, to verify that the valve is open.

3. Technical Specification 3/4.3.2, Engineered Safety Feature Actuation System Instrumentation, requires these valves to open on a SIAS signal.

Opening the breaker would eliminate the ability to satisfy the above three items.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two separate and independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the safety injection tanks is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward.

Each Emergency Core Cooling System (ECCS) subsystem required by Technical Specification 3.5.2 for design basis accident mitigation includes an OPERABLE high pressure safety injection (HPSI) pump and a low pressure safety injection (LPSI) pump. Each of these pumps require an OPERABLE flow path capable of

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

taking suction from the refueling water storage tank (RWST) on a safety injection actuation signal (SIAS). Upon depletion of the inventory in the RWST, as indicated by the generation of a Sump Recirculation Actuation Signal (SRAS), the suction for the HPSI pumps will automatically be transferred to the containment sump. The SRAS will also secure the LPSI pumps. The ECCS subsystems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) as design basis accident mitigation equipment.

Flow from the charging pumps is no longer required for design basis accident mitigation. The loss of coolant accident analysis has been revised and no credit is taken for charging pump flow. As a result, the charging pumps no longer meet the first three criteria of 10 CFR 50.36(c)(2)(ii) as design basis accident mitigation equipment required to be controlled by Technical Specifications. However, the charging pumps are risk significant equipment (10 CFR 50.36(c)(2)(ii) Criterion 4) due to their role in the mitigation of two beyond design basis events, Anticipated Transient Without Scram (ATWS) and Complete Loss of Secondary Heat Sink. Mitigation of these events relies on the charging pumps to provide flow to the RCS. Therefore, requirements for charging pump operability will be retained in Technical Specification 3.5.2 to ensure the charging pumps will be available to supply borated water from the RWST to the Reactor Coolant System.

The requirements for automatic actuation of the charging pumps and the associated boration system components (boric acid pumps, gravity feed valves, boric acid flow path valves) which align the boric acid storage tanks to the charging pump suction on a SIAS have been relocated to the Technical Requirements Manual. These relocated requirements do not affect the OPERABILITY of the charging pumps for Technical Specification 3.5.2.

Surveillance Requirement 4.5.2.a verifies the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths to provide assurance that the proper flow paths will exist for ECCS operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.5.2.b verifies proper valve position to ensure that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removing power to the valve operator ensures that the valves cannot be inadvertently misaligned or change position as the result of an active failure. A 31 day frequency is considered reasonable in view of other administrative controls ensuring that a mispositioned valve is an unlikely possibility.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

Surveillance Requirements 4.5.2.c and 4.5.2.d, which address periodic surveillance testing of the ECCS pumps (high pressure and low pressure safety injection pumps) to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirement 4.5.2.e, which addresses periodic surveillance testing of the charging pumps to detect gross degradation caused by hydraulic component problems, is required by Section XI of the ASME Code. For positive displacement pumps, this type of testing may be accomplished by measuring the pump flow at a specified discharge pressure, consistent with the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test point is greater than or equal to the performance assumed for mitigation of the beyond design basis events. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirements 4.5.2.f, 4.5.2.g, and 4.5.2.h demonstrate that each automatic ECCS flowpath valve actuates to the required position on an actual or simulated actuation signal (SIAS or SRAS), that each ECCS pump starts on receipt of an actual or simulated actuation signal (SIAS), and that the LPSI pumps stop on receipt of an actual or simulated actuation signal (SRAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage, and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Surveillance Requirement 4.5.2.i verifies the high and low pressure safety injection valves listed in Table 4.5-1 will align to the required positions on an SIAS for proper ECCS performance. The safety injection valves have stops to position them properly so that flow is restricted to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

Surveillance Requirement 4.5.2.j addresses periodic inspection of the containment sump to ensure that it is unrestricted and stays in proper operating condition. The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage, on the need to have access to the location, and on the potential for unplanned transients if the surveillance were performed with the reactor at power. This frequency is sufficient to detect abnormal degradation and is confirmed by operating experience.

Surveillance Requirement 4.5.2.k verifies that the Shutdown Cooling (SDC) System open permissive interlock is OPERABLE to ensure the SDC suction isolation valves are prevented from being remotely opened when RCS pressure is at or above the SDC suction design pressure of 300 psia. The suction piping of the SDC pumps (low pressure safety injection pumps) is the SDC component with the limiting design pressure rating. The interlock provides assurance that double isolation of the SDC System from the RCS is preserved whenever RCS pressure is at or above the design pressure. The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

Only one ECCS subsystem is required by Technical Specification 3.5.3 for design basis accident mitigation. This ECCS subsystem requires one OPERABLE HPSI pump and an OPERABLE flow path capable of taking suction from the RWST on a SIAS. Upon depletion of the inventory in the RWST, as indicated by the generation of a SRAS, the suction for the HPSI pump will automatically be transferred to the containment sump. This ECCS subsystem satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) as design basis accident mitigation equipment.

Surveillance Requirement 4.5.3.1 specifies the surveillance requirements of Technical Specification 3.5.2 that are required to demonstrate that the required ECCS subsystem of Technical Specification 3.5.3 is OPERABLE. The required ECCS subsystem of Technical Specification 3.5.3 does not include any LPSI components. LPSI components are not required when Technical Specification 3.5.3 is applicable to allow the LPSI components to be used for SDC System operation.

In MODE 4 the automatic safety injection signal generated by low pressurizer pressure and high containment pressure and the automatic sump recirculation actuation signal generation by low refueling water storage tank level are not required to be OPERABLE. Automatic actuation in MODE 4 is not required because adequate time is available for plant operators to evaluate plant conditions and respond by manually operating engineered safety features components. Since the manual actuation (trip pushbuttons) portion of the safety injection and sump recirculation actuation signal generation is required to be OPERABLE in MODE 4, the plant operators can use the manual trip pushbuttons to rapidly position all components to the required accident position. Therefore, the safety injection and sump recirculation actuation

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

trip pushbuttons satisfy the requirement for generation of safety injection and sump recirculation actuation signals in MODE 4.

In MODE 4, the OPERABLE HPSI pump is not required to start automatically on a SIAS. Therefore, the pump control switch for this OPERABLE pump may be placed in the pull-to-lock position without affecting the OPERABILITY of the pump. This will prevent the pump from starting automatically, which could result in overpressurization of the Shutdown Cooling System. Only one HPSI pump may be OPERABLE in MODE 4 with RCS temperatures less than or equal to 275°F due to the restricted relief capacity with Low-Temperature Overpressure Protection System. To reduce shutdown risk by having additional pumping capacity readily available, a HPSI pump may be made inoperable but available at short notice by shutting its discharge valve with the key lock on the control panel.

The provision in Specification 3.5.3 that Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 4 is provided to allow for connecting the HPSI pump breaker to the respective power supply or to remove the tag and open the discharge valve, and perform the subsequent testing necessary to declare the inoperable HPSI pump OPERABLE. Specification 3.4.9.3 requires all HPSI pumps to be not capable of injecting into the RCS when RCS temperature is at or below 190°F. Once RCS temperature is above 190°F one HPSI pump can be capable of injecting into the RCS. However, sufficient time may not be available to ensure one HPSI pump is OPERABLE prior to entering MODE 4 as required by Specification 3.5.3. Since Specifications 3.0.4 and 4.0.4 prohibit a MODE change in this situation, this exemption will allow Millstone Unit No. 2 to enter MODE 4, take the steps necessary to make the HPSI pump capable of injecting into the RCS, and then declare the pump OPERABLE. If it is necessary to use this exemption during plant heatup, the appropriate action statement of Specification 3.5.3 should be entered as soon as MODE 4 is reached.

3/4.5.4 REFUELING WATER STORAGE TANK (RWST)

The OPERABILITY of the RWST as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that 1) sufficient water is available within containment to permit recirculation cooling flow to the core, and 2) after a LOCA the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes. Small break LOCAs assume that all control rods are inserted, except for the control element assembly (CEA) of highest worth, which remains withdrawn from the core. Large break LOCAs assume that all CEAs remain withdrawn from the core.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

The OPERABILITY of the containment cooling system ensures that 1) the containment air temperature will be maintained within limits during normal operation, and 2) adequate heat removal capacity is available when operated in conjunction with the containment spray system during post-LOCA conditions.

To be OPERABLE, the two trains of the containment spray system shall be capable of taking a suction from the refueling water storage tank on a containment spray actuation signal and automatically transferring suction to the containment sump on a sump recirculation actuation signal. Each containment spray train flow path from the containment sump shall be via an OPERABLE shutdown cooling heat exchanger.

The containment cooling system consists of two containment cooling trains. Each containment cooling train has two containment air recirculation and cooling units. For the purpose of applying the appropriate action statement, the loss of a single containment air recirculation and cooling unit will make the respective containment cooling train inoperable.

Either the containment spray system or the containment cooling system is sufficient to mitigate a loss of coolant accident. The containment spray system is more effective than the containment cooling system in reducing the temperature of superheated steam inside containment following a main steam line break. Because of this, the containment spray system is required to mitigate a main steam line break accident inside containment. In addition, the containment spray system provides a mechanism for removing iodine from the containment atmosphere. Therefore, at least one train of containment spray is required to be OPERABLE when pressurizer pressure is $\geq$ 1750 psia, and the allowed outage time for one train of containment spray reflects the dual function of containment spray for heat removal and iodine removal.

Surveillance Requirement 4.6.2.1.1.a verifies the correct alignment for manual, power operated, and automatic valves in the Containment Spray System flow paths to provide assurance that the proper flow paths will exist for containment spray operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonacccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

Surveillance Requirement 4.6.2.1.1.b, which addresses periodic surveillance testing of the containment spray pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirements 4.6.2.1.1.c and 4.6.2.1.1.d demonstrate that each automatic containment spray valve actuates to the required position on an actual or simulated actuation signal (CSAS or SRAS), and that each containment spray pump starts on receipt of an actual or simulated actuation signal (CSAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Surveillance Requirement 4.6.2.1.1.e demonstrates that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. This surveillance is normally performed by blowing low pressure air or smoke through test connections with the containment spray inlet valves closed and the spray header drained of any solution. Due to the passive design of the nozzles, a test at 10 year intervals is considered adequate to detect obstruction of the spray nozzles.

Surveillance Requirement 4.6.2.1.2.a demonstrates that each containment air recirculation and cooling unit can be operated in slow speed for $\geq$ 15 minutes to ensure OPERABILITY and that all associated controls are functioning properly. It also ensures fan or motor failure can be detected and corrective action taken. The 31 day frequency considers the known reliability of the fan units and controls, the two train redundancy available, and the low probability of a significant degradation of the containment air recirculation and cooling unit occurring between surveillances. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.6.2.1.2.b demonstrates a cooling water flow rate of $\geq$ 500 gpm to each containment air recirculation and cooling unit to provide assurance a cooling water flow path through the cooling unit is available. The 31 day frequency considers the known reliability of the cooling water system, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances. This frequency has been shown to be acceptable through operating experience.

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

Surveillance Requirement 4.6.2.1.2.c demonstrates that each containment air recirculation and cooling unit starts on receipt of an actual or simulated actuation signal (SIAS). The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The Technical Requirements Manual contains the list of containment isolation valves (except the containment air lock and equipment hatch). Any changes to this list will be reviewed under 10CFR50.59 and approved by the committee(s) as described in the NUQAP Topical Report.

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The containment isolation valves are used to close all fluid (liquid and gas) penetrations not required for operation of the engineered safety feature systems, to prevent the leakage of radioactive materials to the environment. The fluid penetrations which may require isolation after an accident are categorized as Type P, O, or N. The penetration types are listed with the containment isolation valves in the Technical Requirements Manual.

Type P penetrations are lines that connect to the reactor coolant pressure boundary (Criterion 55 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

Type O penetrations are lines that are open to the containment internal atmosphere (Criterion 56 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

Type N penetrations are lines that neither connect to the reactor coolant pressure boundary nor are open to the containment internal atmosphere, but do form a closed system within the containment structure (Criterion 57 of 10CFR50, Appendix A). These lines are provided with single containment isolation valves outside containment. These valves are either remotely operated or locked closed manual valves.

Locked or sealed closed containment isolation valves may be opened on an intermittent basis provided appropriate administrative controls are established. The position of the NRC concerning acceptable administrative controls is contained in Generic Letter 91-08, "Removal of Component Lists

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

from Technical Specifications," and includes the following considerations:

(1) stationing an operator, who is in constant communication with the control room, at the valve controls,

(2) instructing this operator to close these valves in an accident situation, and

(3) assuring that environmental conditions will not preclude access to close the valve and that this action will prevent the release of radioactivity outside the containment.

The appropriate administrative controls, based on the above considerations, to allow locked or sealed closed containment isolation valves to be opened are contained in the procedures that will be used to operate the valves. Entries should be placed in the Shift Manager Log when these valves are opened and closed. However, it is not necessary to log into any Technical Specification Action Statement for these valves, provided the appropriate administrative controls have been established.

If a locked or sealed closed containment isolation valve is opened while operating in accordance with Abnormal or Emergency Operating Procedures (AOPs and EOPs), it is not necessary to establish a dedicated operator. The AOPs and EOPs provide sufficient procedural control over the operation of the containment isolation valves.

Opening a locked or sealed closed containment isolation valve bypasses a plant design feature that prevents the release of radioactivity outside the containment. Therefore, this should not be done frequently, and the time the valve is opened should be minimized. As a general guideline, a locked or sealed closed containment isolation valve should not be opened longer than the time allowed to restore the valve to OPERABLE status, as stated in the action statement for LCO 3.6.3.1 "Containment Isolation Valves."

A discussion of the appropriate administrative controls for the containment isolation valves, that are expected to be opened during operation in MODES 1 through 4, is presented below.

Manual containment isolation valve 2-SI-463, safety injection tank (SIT) recirculation header stop valve, is opened to fill or drain the SITs and for Shutdown Cooling System (SDC) boron equalization. While 2-SI-463 is open, a dedicated operator, in continuous communication with the control room, is required.

When SDC is initiated, SDC suction isolation remotely operated valves 2-SI-652 and 2-SI-651 (inside containment isolation valve) and manual valve 2-SI-709 (outside containment isolation valve) are opened. 2-SI-651 is normally operated from the control room. While in Modes 1, 2 or 3, 2-SI-651 is closed with the closing and opening coils removed and stored to satisfy Appendix R requirements. It does not receive an automatic containment isolation closure signal, but is interlocked to prevent opening if Reactor Coolant System (RCS) pressure is greater than approximately 275 psia. When 2-SI-651 is opened from the control room, either one of the two required

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

licensed (Reactor Operator) control room operators can be credited as the dedicated operator required for administrative control. It is not necessary to use a separate dedicated operator.

When valve 2-SI-709 is opened locally, a separate dedicated operator is not required to remain at the valve. 2-SI-709 is opened before 2-SI-651. Therefore, opening 2-SI-709 will not establish a connection between the RCS and the SDC System. Opening 2-SI-651 will connect the RCS and SDC System. If a problem then develops, 2-SI-651 can be closed from the control room.

The administrative controls for valves 2-SI-651 and 2-SI-709 apply only during preparations for initiation of SDC, and during SDC operations. They are acceptable because RCS pressure and temperature are significantly below normal operating pressure and temperature when 2-SI-651 and 2-SI-709 are opened, and these valves are not opened until shortly before SDC flow is initiated. The penetration flowpath can be isolated from the control room by closing either 2-SI-652 or 2-SI-651, and the manipulation of these valves, during this evolution, is controlled by plant procedures.

The pressurizer auxiliary spray valve, 2-CH-517, can be used as an alternate method to decrease pressurizer pressure, or for boron precipitation control following a loss of coolant accident. When this valve is opened from the control room, either one of the two required licensed (Reactor Operator) control room operators can be credited as the dedicated operator required for administrative control. It is not necessary to use a separate dedicated operator.

The exception for 2-CH-517 is acceptable because the fluid that passes through this valve will be collected in the Pressurizer (reverse flow from the Pressurizer to the charging system is prevented by check valve 2-CH-431), and the penetration associated with 2-CH-517 is open during accident conditions to allow flow from the charging pumps. Also, this valve is normally operated from the control room, under the supervision of the licensed control room operators, in accordance with plant procedures.

A dedicated operator is not required when opening remotely operated valves associated with Type N fluid penetrations (Criterion 57 of 10CFR50, Appendix A). Operating these valves from the control room is sufficient. The main steam isolation valves (2-MS-64A and 64B), atmospheric steam dump valves (2-MS-190A and 190B), and the containment air recirculation cooler RBCCW discharge valves (2-RB-28.2A-D) are examples of remotely operated containment isolation valves associated with Type N fluid penetrations.

MSIV bypass valves 2-MS-65A and 65B are remotely operated MOVs, but while in MODE 1, they are closed with power to the valve motors removed via lockable disconnect switches located at their respective MCC to satisfy Appendix "R" requirements.

Local operation of the atmospheric steam dump valves (2-MS-190A and 190B), or other remotely operated valves associated with Type N fluid penetrations, will require a dedicated operator in constant communication with the control room, except when operating in accordance with AOPs or EOPs. Even though these valves can not be classified as locked or sealed closed, the use of a dedicated operator will satisfy administrative control requirements.

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

Local operation of these valves with a dedicated operator is equivalent to the operation of other manual (locked or sealed closed) containment isolation valves with a dedicated operator.

The main steam supplies to the turbine driven auxiliary feedwater pump (2-MS-201 and 2-MS-202) are remotely operated valves associated with Type N fluid penetrations. These valves are maintained open during power operation. 2-MS-201 is maintained energized, so it can be closed from the control room, if necessary, for containment isolation. However, 2-MS-202 is deenergized open by removing power to the valve's motor via a lockable disconnect switch to satisfy Appendix R requirements. Therefore, 2-MS-202 cannot be closed immediately from the control room, if necessary, for containment isolation. The disconect switch key to power for 2-MS-202 is stored in the Unit 2 control room, and can be used to re-power the valve at the MCC; this will allow the valve to be closed from the control room. It is not necessary to maintain a dedicated operator at 2-MS-202 because this valve is already in the required accident position. Also, the steam that passes through this valve should not contain any radioactivity. The steam generators provide the barrier between the containment and the atmosphere. Therefore, it would take an additional structural failure for radioactivity to be released to the environment through this valve.

Steam generator chemical addition valves, 2-FW-15A and 2-FW-15B, are opened to add chemicals to the steam generators using the Auxiliary Feedwater System (AFW). When either 2-FW-15A or 2-FW-15B is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of these valves is expected during plant startup and shutdown.

The bypasses around the main steam supplies to the turbine driven auxiliary feedwater pump (2-MS-201 and 2-MS-202), 2-MS-458 and 2-MS-459, are opened to drain water from the steam supply lines. When either 2-MS-458 or 2-MS-459 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of these valves is expected during plant startup.

The containment station air header isolation, 2-SA-19, is opened to supply station air to containment. When 2-SA-19 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is only expected for maintenance activities inside containment.

The backup air supply master stop, 2-IA-566, is opened to supply backup air to 2-CH-517, 2-CH-518, 2-CH-519, 2-EB-88, and 2-EB-89. When 2-IA-566 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is only expected in response to a loss of the normal air supply to the valves listed.

The nitrogen header drain valve, 2-SI-045, is opened to depressurize the containment side of the nitrogen supply header stop valve, 2-SI-312. When 2-SI-045 is opened, a dedicated operator, in continuous communication with the

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

control room, is required. Operation of this valve is only expected after using the high pressure nitrogen system to raise SIT nitrogen pressure.

The containment waste gas header test connection isolation valve, 2-GR-63, is opened to sample the primary drain tank for oxygen and nitrogen. When 2-GR-63 is opened, a dedicated operator, in continuous communication with the control room, is required. Operation of this valve is expected during plant startup and shutdown.

The upstream vent valves for the steam generator atmospheric dump valves, 2-MS-369 and 2-MS-371, are opened during steam generator safety valve set point testing to allow steam header pressure instrumentation to be placed in service. When either 2-MS-369 or 2-MS-371 is opened, a dedicated operator in continuous communication with the control room is required.

The determination of the appropriate administrative controls for these containment isolation valves included an evaluation of the expected environmental conditions. This evaluation has concluded environmental conditions will not preclude access to close the valve, and this action will prevent the release of radioactivity outside of containment through the respective penetration.

The containment purge supply and exhaust isolation valves are required to be sealed closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA or steam line break accident. Such a demonstration would require justification of the mechanical operability of the purge valves and consideration of the appropriateness of the electrical override circuits. Maintaining these valves closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system. The containment purge supply and exhaust isolation valves are sealed closed by removing power from the valves. This is accomplished by pulling the control power fuses for each of the valves. The associated fuse blocks are then locked. This is consistent with the guidance contained in NUREG-0737 Item II.E.4.2 and Standard Review Plan 6.2.4, "Containment Isolation System," Item II.f.

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS

The OPERABILITY of the auxiliary feedwater pumps ensures that the Reactor Coolant System can be cooled down to less than 300°F from normal operating conditions in the event of a total loss of off-site power.

Any single motor driven or steam driven pump has the required capacity to provide sufficient feedwater flow to remove reactor decay heat and reduce the RCS temperature to 300°F where the shutdown cooling system may be placed into operation for continued cooldown.

The Auxiliary Feed Water (AFW) system is OPERABLE when the AFW pumps and flow paths required to provide AFW to the steam generators are OPERABLE. Technical Specification 3.7.1.2 requires three AFW pumps to be OPERABLE and provides ACTIONS to address inoperable AFW pumps. The AFW flow path requirements are separated into AFW pump suction flow path requirements, AFW pump discharge flow path to the common discharge header requirements, and common discharge header to the steam generators flow path requirements.

There are two AFW pump suction flow paths from the Condensate Storage Tank to the AFW pumps. One flow path to the turbine driven AFW pump, and one flow path to both motor driven AFW pumps. There are three AFW pump discharge flow paths to the common discharge header, one flow path from each of the three AFW pumps. There are two AFW discharge flow paths from the common discharge header to the steam generators, one flow path to each steam generator. With 2-FW-44 open (normal position), the discharge from any AFW pump will be supplied to both steam generators through the associated AFW regulating valves.

A flow path may be considered inoperable as the result of closing a manual valve, failure of an automatic valve to respond correctly to an actuation signal, or failure of the piping. In the case of an inoperable automatic AFW regulating valve (2-FW-43A or B), flow path OPERABILITY can be restored by use of a dedicated operator stationed at the associated bypass valve (2-FW-56A or B) as directed by OP 2322. Failure of the common discharge header piping will cause both discharge flow paths to the steam generators to be inoperable.

An inoperable suction flow path to the turbine driven AFW pump will result in one inoperable AFW pump. An inoperable suction flow path to the motor driven AFW pumps will result in two inoperable AFW pumps. The ACTION requirements of Technical Specification 3.7.1.2 are applicable based on the number of inoperable AFW pumps.

An inoperable pump discharge flow path from an AFW pump to the common discharge header will cause the associated AFW pump to be inoperable. The ACTION requirements of Technical Specification 3.7.1.2 for one AFW pump are applicable for each affected pump discharge flow path.

AFW must be capable of being delivered to both steam generators for design basis accident mitigation. Certain design basis events, such as a main steam line break or steam generator tube rupture, require that the affected steam generator be isolated, and the RCS decay heat removal safety

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

function be satisfied by feeding and steaming the unaffected steam generator. If a failure in an AFW discharge flow path from the common discharge header to a steam generator prevents delivery of AFW to a steam generator, then the design basis events may not be effectively mitigated. In this situation, the ACTION requirements of Technical Specification 3.0.3 are applicable and an immediate plant shutdown is appropriate.

Two inoperable AFW System discharge flow paths from the common discharge header to both steam generators will result in a complete loss of the ability to supply AFW flow to the steam generators. In this situation, all three AFW pumps are inoperable and the ACTION requirements of Technical Specification 3.7.1.2 are applicable. Immediate corrective action is required. However, a plant shutdown is not appropriate until a discharge flow path from the common discharge header to one steam generator is restored.

During quarterly surveillance testing of the turbine driven AFW pump, valve 2-CN-27A is closed and valve 2-CN-28 is opened to prevent overheating the water being circulated. In this configuration, the suction of the turbine driven AFW pump is aligned to the Condensate Storage Tank via the motor driven AFW pump suction flow path, and the pump minimum flow is directed to the Condensate Storage Tank by the turbine driven AFW pump suction path upstream of 2-CN-27A in the reverse direction. During this surveillance, the suction path to the motor driven AFW pump suction path remains OPERABLE, and the turbine driven AFW suction path is inoperable. In this situation, the ACTION requirements of Technical Specification 3.7.1.2 for one AFW pump are applicable.

Surveillance Requirement 4.7.1.2.a verifies the correct alignment for manual, power operated, and automatic valves in the Auxiliary Feedwater (AFW) System flow paths (water and steam) to provide assurance that the proper flow paths will exist for AFW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.

Surveillance Requirement 4.7.1.2.b, which addresses periodic surveillance testing of the AFW pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

performance assumed in the unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements. This surveillance is modified to indicate that the test can be deferred for the steam driven AFW pump until suitable plant conditions are established. This deferral is required because steam pressure is not sufficient to perform the test until after MODE 3 is entered. However, the test, if required, must be performed prior to entering MODE 2.

Surveillance Requirements 4.7.1.2.c and 4.7.1.2.d demonstrate that each automatic AFW valve actuates to the required position on an actual or simulated actuation signal (AFWAS) and that each AFW pump starts on receipt of an actual or simulated actuation signal (AFWAS). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform these surveillances under the condtions that apply during a plant outage and the potential for unplanned transients if the surveillances were performed with the reactor at power. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Enginneered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program. These surveillances do not apply to the steam driven AFW pump and associated valves which are not automatically actuated.

Surveillance Requirement 4.7.1.2.e demonstrates the AFW System is properly aligned by verifying the flow path to each steam generator prior to entering MODE 2, after 30 cumulative days in MODE 5, MODE 6, or a defueled condition. OPERABILITY of the AFW flow paths must be verified before sufficient core heat is generated that would require operation of the AFW System during a subsequent shutdown. To further ensure AFW System alignment, the OPERABILITY of the flow paths is verified following extended outages to determine that no misalignment of valves has occurred. The frequency is reasonable, based on engineering judgment, and other administrative controls to ensure the flow paths are OPERABLE.

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available for cooldown of the Reactor Coolant System to less than 300°F in the event of a total loss of off-site power. The minimum water volume is sufficient to maintain the RCS at HOT STANDBY conditions for 10 hours with steam discharge to atmosphere. The contained water volume limit includes an allowance for water not usable due to discharge nozzle pipe elevation above tank bottom, plus an allowance for vortex formation.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction