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Dominion®

December 1, 2015

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Serial No.: 15-541
NL&OS/TFO: R0
Docket No.: 50-336
License No.: DPR-65

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2
SUPPLEMENT TO LICENSE AMENDMENT REQUEST TO ADOPT TSTF-523, REVISION 2, GENERIC LETTER 2008-01, MANAGING GAS ACCUMULATION

By letter dated January 15, 2015, Dominion Nuclear Connecticut, Inc. (DNC) submitted a license amendment request (LAR) for Millstone Power Station Unit 2 (MPS2) and Millstone Power Station Unit 3 (MPS3) (Reference 1). The proposed amendment would modify Technical Specification (TS) requirements to address Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," as described in Technical Specifications Task Force (TSTF)-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation." TSTF-523, Revision 2 was approved for use by the Nuclear Regulatory Commission (NRC) as published in the Federal Register on January 15, 2014 (79 FR 2700).

TSTF-523, Revision 2, modifies or adds Surveillance Requirement(s) (SRs) to require verification that the Emergency Core Cooling System (ECCS), Shutdown Cooling (SDC) System, and the Containment Spray (CS) System are not rendered inoperable due to accumulated gas, and to provide allowances which permit performance of the revised verification.

TSTF-523, Revision 2, allows the frequencies of the SRs related to management of gas accumulation to be in accordance with a Surveillance Frequency Control Program (SFCP). However, when DNC submitted the January 15, 2015 LAR to adopt TSTF-523, Revision 2, the October 22, 2014 MPS2 LAR to adopt an SFCP (Reference 2) had not yet been approved. As a result, the January 15, 2015 LAR identified a specific surveillance frequency for the MPS2 SRs related to management of gas accumulation in lieu of an SFCP.

On October 29, 2015, the NRC approved License Amendment 324 to allow MPS2 to adopt an SFCP (Reference 3). This supplement is being submitted to incorporate the surveillance frequencies proposed in the January 15, 2015 LAR into the SFCP, which was approved by License Amendment 324 for MPS2. Specifically DNC is providing revised marked-up TS pages for the January 15, 2015 LAR which replace the proposed new MPS2 surveillance frequencies with "at the frequency specified in the Surveillance Frequency Control Program."

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Attachment 1 provides revised marked-up TS pages reflecting the change to the SFCP. Attachment 2 provides the revised marked-up TS Bases pages and is provided for information only. The changes to the affected MPS2 TS Bases pages will be incorporated in accordance with the TS Bases Control Program when this amendment is approved. Attachments 1 and 2 of this letter supersede the proposed TS and TS Bases changes provided in Attachments 2 and 3 of the January 15, 2015 LAR in their entirety.

The changes provided in this supplement do not alter the conclusion of the original January 15, 2015 LAR that the proposed changes do not involve a significant hazards consideration.

In accordance with 10 CFR 50.91, a copy of this letter, with attachment, is being provided to the State of Connecticut.

If you should have any questions regarding this submittal, please contact Wanda Craft at (804) 273-4687.

Sincerely,

Gianna C Clark

Gianna C. Clark
Vice President – Nuclear Support Services

Vicki L. Hull
NOTARY PUBLIC
Commonwealth of Virginia
Reg. # 140542
My Commission Expires May 31, 2018

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Gianna C. Clark, who is Vice President – Nuclear Support Services, of Dominion Nuclear Connecticut, Inc. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 1st day of December, 2015.

My Commission Expires: May 31, 2018.

Vicki L. Hull
Notary Public

References

1. Dominion Nuclear Connecticut, Inc., Millstone Power Station Units 2 and 3, Proposed License Amendment Requests to Adopt TSTF-523, Revision 2, Generic Letter 2008-01, Managing Gas Accumulation, dated January 15, 2015 (ML15021A128)

2. Dominion Nuclear Connecticut, Inc., Millstone, Unit 2, License Amendment Request to Relocate TS Surveillance Frequencies to Licensee Controlled Program in Accordance with TSTF-425, Revision 3, dated October 22, 2014 (ML14301A112)

3. NRC letter to Mr. David A. Heacock, "Millstone Power Station, Unit No. 2 - Issuance of Amendment Re: Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program, Adoption of TSTF-425, Revision 3 (TAC No. MF5096)," dated October 29, 2015 (ML15280A242)

Attachments:

1. Revised Marked-Up Technical Specification Pages
2. Revised Marked-Up Technical Specification Bases Pages - For Information Only

Commitments contained in this letter: None

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ATTACHMENT 1

REVISED MARKED-UP TECHNICAL SPECIFICATION PAGES

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

REACTOR COOLANT SYSTEM

For Information

COOLANT LOOPS AND COOLANT CIRCULATION

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 Two loops or trains consisting of any combination of reactor coolant loops or shutdown cooling trains shall be OPERABLE and one loop or train shall be in operation.

NOTES

1. All reactor coolant pumps and shutdown cooling pumps may not be in operation for up to 1 hour per 8 hour period provided:

   a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1; and

   b. core outlet temperature is maintained at least 10°F below saturation temperature.

2. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:

   a. pressurizer water level is < 43.7%;

   b. pressurizer pressure is < 340 psia; and

   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.

APPLICABILITY: MODE 4

ACTION: a. With one reactor coolant loop AND two shutdown cooling trains inoperable:

Immediately initiate action to restore a second reactor coolant loop, or one shutdown cooling train to OPERABLE status.

b. With two reactor coolant loops AND one shutdown cooling train inoperable:

Immediately initiate action to restore a second shutdown cooling train, or one reactor coolant loop to OPERABLE status, and be in COLD SHUTDOWN within 24 hours.

c. With all reactor coolant loops AND shutdown cooling trains inoperable, OR no reactor coolant loop or shutdown cooling train in operation:

Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one reactor coolant loop or one shutdown cooling train to OPERABLE status and operation.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT SHUTDOWN

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required pump, if not in operation, shall be determined OPERABLE at the frequency specified in the Surveillance Frequency Control Program by verifying correct breaker alignment and indicated power available.

4.4.1.3.2 The required steam generator(s) shall be determined OPERABLE, by verifying the secondary side water level to be ≥ 10% narrow range at the frequency specified in the Surveillance Frequency Control Program.

4.4.1.3.3 One reactor coolant loop or shutdown cooling train shall be verified to be in operation at the frequency specified in the Surveillance Frequency Control Program.

---NOTE---

Not required to be performed until 12 hours after entering MODE 4.

4.4.1.3.4 Locations susceptible to gas accumulation in the required shutdown cooling trains shall be verified to be sufficiently filled with water at the frequency specified in the Surveillance Frequency Control Program.

For Information

COOLANT LOOPS AND COOLANT CIRCULATION

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4 One shutdown cooling train shall be OPERABLE and in operation, and either:

a. One additional shutdown cooling train shall be OPERABLE;

OR

b. The secondary side water level of each steam generator shall be ≥ 10% narrow range.

NOTES

1. The normal or emergency power source may be inoperable in MODE 5.
2. All shutdown cooling pumps may not be in operation for up to 1 hour per 8 hour period provided:
    a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1; and
    b. core outlet temperature is maintained at least 10°F below saturation temperature.
3. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:
    a. pressurizer water level is < 43.7%;
    b. pressurizer pressure is < 340 psia; and
    c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.
4. One required shutdown cooling train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling train is OPERABLE and in operation.
5. All shutdown cooling trains may not be in operation during planned heatup to MODE 4 when at least one reactor coolant loop is in operation.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

LIMITING CONDITION FOR OPERATION (continued)

APPLICABILITY: MODE 5 with Reactor Coolant System loops filled.

ACTION:

a. With one shutdown cooling train inoperable and any steam generator secondary water level not within limits, immediately initiate action to either restore a second shutdown cooling train to OPERABLE status or restore steam generator secondary water levels to within limit.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

4.4.1.4.1 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE at the frequency specified in the Surveillance Frequency Control Program by verifying correct breaker alignment and indicated power available.

4.4.1.4.2 The required steam generators shall be determined OPERABLE, by verifying the secondary side water level to be ≥ 10% narrow range at the frequency specified in the Surveillance Frequency Control Program.

4.4.1.4.3 One shutdown cooling train shall be verified to be in operation at the frequency specified in the Surveillance Frequency Control Program.

4.4.1.4.4 Locations susceptible to gas accumulation in the required shutdown cooling trains shall be verified to be sufficiently filled with water at the frequency specified in the Surveillance Frequency Control Program.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.5 Two shutdown cooling trains shall be OPERABLE and one shutdown cooling train shall be in operation.

NOTES

1. The normal or emergency power source may be inoperable in MODE 5.

2. All shutdown cooling pumps may not be in operation for up to 15 minutes when switching from one train to another provided:

   a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1;

   b. core outlet temperature is maintained at least 10°F below saturation temperature; and

   c. no draining operations to further reduce Reactor Coolant System water volume are permitted.

3. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is $\leq$ 275°F. The first reactor coolant pump shall not be started unless:

   a. pressurizer water level is < 43.7%;

   b. pressurizer pressure is < 340 psia; and

   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature

4. One shutdown cooling train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling train is OPERABLE and in operation.

APPLICABILITY: MODE 5 with Reactor Coolant System loops not filled.

ACTION:

a. With one shutdown cooling train inoperable, immediately initiate action to restore the required shutdown cooling train to OPERABLE status.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

SURVEILLANCE REQUIREMENTS

4.4.1.5.1 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE at the frequency specified in the Surveillance Frequency Control Program by verifying correct breaker alignment and indicated power available.

4.4.1.5.2 One shutdown cooling train shall be verified to be in operation at the frequency specified in the Surveillance Frequency Control Program.

4.4.1.5.3 Locations susceptible to gas accumulation in the required shutdown cooling trains shall be verified to be sufficiently filled with water at the frequency specified in the Surveillance Frequency Control Program.

-------------------------------NOTE---------------------------
Not required to be met for system vent flow paths opened under administrative control.

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At the frequency specified in the Surveillance Frequency Control Program 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 the frequency specified in the Surveillance Frequency Control Program 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**

* Pinned and locked at preset throttle open position.

** To be closed prior to recirculation following LOCA.

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 the frequency specified in the Surveillance Frequency Control Program 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 the frequency specified in the Surveillance Frequency Control Program by verifying each high pressure safety injection pump and low pressure safety injection pump starts automatically on an actual or simulated actuation signal.

SURVEILLANCE REQUIREMENTS (Continued)

h. At the frequency specified in the Surveillance Frequency Control Program 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 the frequency specified in the Surveillance Frequency Control Program.

j. At the frequency specified in the Surveillance Frequency Control Program 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 strainers show no evidence of structural distress or abnormal corrosion.

k. At the frequency specified in the Surveillance Frequency Control Program 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.

l. At the frequency specified in the Surveillance Frequency Control Program by verifying that ECCS locations susceptible to gas accumulation are sufficiently filled with water.

EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS - T_{avg} < 300°F

LIMITING CONDITION FOR OPERATION

3.5.3 One high pressure safety injection 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 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~~.~~

, and 4.5.2.l.

* With pressurizer pressure < 1750 psia.

CONTAINMENT SYSTEMS

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 the frequency specified in the Surveillance Frequency Control Program 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.

------------------------------NOTE------------------------------
Not required to be met for system vent flow paths opened under administrative control.

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 the frequency specified in the Surveillance Frequency Control Program 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 the frequency specified in the Surveillance Frequency Control Program by verifying each containment spray pump starts automatically on an actual or simulated actuation signal.

e. By verifying each spray nozzle is unobstructed following activities that could cause nozzle blockage.

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

a. At the frequency specified in the Surveillance Frequency Control Program by operating each containment air recirculation and cooling unit in slow speed for $\geq$ 15 minutes.

b. At the frequency specified in the Surveillance Frequency Control Program by verifying each containment air recirculation and cooling unit cooling water flow rate is $\geq$ 500 gpm.

c. At the frequency specified in the Surveillance Frequency Control Program by verifying each containment air recirculation and cooling unit starts automatically on an actual or simulated actuation signal.

f. At the frequency specified in the Surveillance Frequency Control Program by verifying the Containment Spray System locations susceptible to gas accumulation are sufficiently filled with water.

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

ACTION:

With no shutdown cooling train OPERABLE or in operation, perform the following actions:

a. Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1 and the loading of irradiated fuel assemblies in the core; and

b. Immediately initate action to restore one shutdown cooling train to OPERABLE status and operation; and

c. Within 4 hours place the containment penetrations in the following status:

    1. Close the equipment door and secure with at least four bolts; and

    2. Close at least one personnel airlock door; and

    3. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

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4.9.8.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at the frequency specified in the Surveillance Frequency Control Program.

4.9.8.1.2. Locations susceptible to gas accumulation in the required shutdown cooling trains shall be verified to be sufficiently filled with water at the frequency specified in the Surveillance Frequency Control Program.

LIMITING CONDITION FOR OPERATION (continued)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

4.9.8.2.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at the frequency specified in the Surveillance Frequency Control Program.

4.9.8.2.2 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE at the frequency specified in the Surveillance Frequency Control Program by verifying correct breaker alignment and indicated power available.

4.9.8.2.3 Locations susceptible to gas accumulation in the required shutdown cooling trains shall be verified to be sufficiently filled with water at the frequency specified in the Surveillance Frequency Control Program.

ATTACHMENT 2

REVISED MARKED-UP TECHNICAL SPECIFICATION BASES PAGES

FOR INFORMATION ONLY

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION (continued)

train must be in operation. Any exceptions to these requirements are contained in the LCO Notes.

An OPERABLE SDC train, for plant operation in MODES 4 and 5, includes a pump, heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine RCS temperature. In addition, sufficient portions of the Reactor Building Closed Cooling Water (RBCCW) and Service Water (SW) Systems shall be OPERABLE as required to provide cooling to the SDC heat exchanger. The flow path starts at the RCS hot leg and is returned to the RCS cold legs. Management of gas voids is important to SDC System OPERABILITY.

In MODE 4, an OPERABLE SDC train consists of the following equipment:

1. An OPERABLE SDC pump (low pressure safety injection pump);

2. The associated SDC heat exchanger from the same facility as the SDC pump;

3. The associated reactor building closed cooling water loop from the same facility as the SDC pump;

4. The associated service water loop from the same facility as the SDC pump; and

5. All valves required to support SDC System operation are in the required position or are capable of being placed in the required position.

In MODE 4, two OPERABLE SDC trains require 2 SDC pumps, 2 SDC heat exchangers, 2 RBCCW pumps, 2 RBCCW heat exchangers, and 2 SW pumps. In addition, 2 RBCCW headers and 2 SW headers are required to support the SDC heat exchangers, consistent with the requirements of Technical Specifications 3.7.3.1 and 3.7.4.1.

In MODE 5, an OPERABLE SDC train consists of the following equipment:

1. An OPERABLE SDC pump (low pressure safety injection pump);

2. The associated SDC heat exchanger from the same facility as the SDC pump;

3. An RBCCW pump, powered from the same facility as the SDC pump, and RBCCW heat exchanger capable of cooling the associated SDC heat exchanger;

4. A SW pump, powered from the same facility as the SDC pump, capable of supplying cooling water to the associated RBCCW heat exchanger; and

5. All valves required to support SDC System operation are in the required position or are capable of being placed in the required position

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION (continued)

In MODE 5, two OPERABLE SDC trains require 2 SDC pumps, 2 SDC heat exchangers, 2 RBCCW pumps, 2 RBCCW heat exchangers, and 2 SW pumps. In addition, 2 RBCCW headers are required to provide cooling to the SDC heat exchangers, but only 1 SW header is required to support the SDC trains. The equipment specified is sufficient to address a single active failure of the SDC System and associated support systems.

In addition, two SDC trains can be considered OPERABLE, with only one 125-volt D.C. bus train OPERABLE, in accordance with Limiting Condition for Operation (LCO) 3.8.2.4. 2-SI-306 and 2-SI-657 are both powered from the same 125-volt D.C. bus, on Facility 1. Should these valves reposition due to a loss of power, SDC would no longer be aligned to cool the RCS. However, a designated operator is assigned to reposition these valves as necessary in the event 125-volt D.C. power is lost. Consistent with the bases for LCO 3.8.2.4, the 125-volt D.C. support system operability requirements for both trains of SDC are satisfied in MODE 5 with at least one 125-volt D.C. bus train OPERABLE and the 125-volt D.C. buses cross-tied.

The operation of one Reactor Coolant Pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

Insert A →

The restrictions on starting a Reactor Coolant Pump in MODE 4 with one or more RCS cold legs ≤ 275°F and in MODE 5 are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by:

1. Restricting pressurizer water volume to ensure sufficient steam volume is available to accommodate the insurge;

2. Restricting pressurizer pressure to establish an initial pressure that will ensure system pressure does not exceed the limit; and

3. Restricting primary to secondary system delta-T to reduce the energy addition from the secondary system.

If these restrictions are met, the steam bubble in the pressurizer is sufficient to ensure the Appendix G limits will not be exceeded. No credit has been taken for PORV actuation to limit RCS pressure in the analysis of the energy addition transient.

MPS2 Insert A, Bases - RCS Loops Modes 4 and 5 loops filled or unfilled

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required SDC train(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of SDC System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points, and to confirm the location and orientation of important components that can become sources of gas, or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The SDC System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criterion for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the SDC System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

Surveillance Requirements 4.4.1.3.4, 4.4.1.4.4, and 4.4.1.5.3 are performed for SDC System locations susceptible to gas accumulation and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval. The operating SDC pump and associated piping are exempted from this surveillance requirement, in that the operating train is self venting/flushing.

The monitoring frequency takes into consideration the gradual nature of gas accumulation in the SDC piping and the procedural controls governing system operation. The frequency is controlled by the Surveillance Frequency Control Program. The surveillance frequency may vary by each location's susceptibility to gas accumulation.

Surveillance Requirement 4.4.1.3.4 is not required to be performed until 12 hours after entering MODE 4. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering MODE 4.

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.

Management of gas voids is important to ECCS OPERABILITY.

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

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 surveillance frequency is controlled under the Surveillance Frequency Control Program.

Insert B

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. The surveillance frequency is controlled under the Surveillance Frequency Control Program.

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 the ASME Code for Operation and Maintenance of Nuclear Power Plants (ASME OM 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. The ASME OM 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 the ASME OM Code. For positive displacement pumps, this type of testing may be accomplished by comparing the measured pump flow, discharge pressure and vibration to their respective acceptance criteria. Acceptance criteria are verified to bound the assumptions utilized in accident analyses. 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. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

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

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 surveillance frequency is controlled under the Surveillance Frequency Control Program. 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 surveillance frequency is controlled under the Surveillance Frequency Control Program.

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 surveillance frequency is controlled under the Surveillance Frequency Control Program.

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 surveillance frequency is controlled under the Surveillance Frequency Control Program.

Insert C

MPS2 Insert B - ECCS Subsystems

Surveillance Requirement 4.5.2.a is modified to exempt system vent flow paths opened under administrative control. The administrative controls are proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.

MPS2 Insert C – ECCS Subsystems

ECCS piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the ECCS and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel

Surveillance Requirement 4.5.2.l verifies that the locations susceptible to gas accumulation in the ECCS are sufficiently full of water. Selection of ECCS locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The ECCS is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criterion for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the ECCS is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

ECCS locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

The monitoring frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation. The frequency is controlled by the Surveillance Frequency Control Program. The surveillance frequency may vary by each location's susceptibility to gas accumulation.

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. Management of gas voids is important to Containment Spray System OPERABILITY.

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.

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 surveillance frequency is controlled under the Surveillance Frequency Control Program.

Insert D

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 the ASME OM 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. The ASME OM 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. These surveillance frequencies are controlled under the Surveillance Frequency Control Program. 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 requires verification that each spray nozzle is unobstructed following maintenance that could cause nozzle blockage. Normal plant operation and maintenance activities are not expected to trigger performance of this surveillance requirement. However, activities, such as an inadvertent spray actuation that causes fluid flow through the nozzles, a major configuration change, or a loss of foreign material control when working within the respective system boundary may require surveillance performance. An evaluation, based on the specific situation, will determine the appropriate method (e.g., visual inspection, air or smoke flow test) to verify no nozzle obstruction.

Insert E

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 surveillance frequency is controlled under the Surveillance Frequency Control Program.

Insert D – Containment Spray System

Surveillance Requirement 4.6.2.1.1.a is modified to exempt system vent flow paths opened under administrative control. The administrative controls are proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.

Insert E – Spray Systems

Containment Spray System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required containment spray trains and may also prevent water hammer and pump cavitation.

Surveillance Requirement 4.6.2.1.1.f verifies that the locations susceptible to gas accumulation in the Containment Spray System are sufficiently full of water. Selection of Containment Spray System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The Containment Spray System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criterion for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the Containment Spray System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

Containment Spray System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

The monitoring frequency takes into consideration the gradual nature of gas accumulation in the Containment Spray System piping and the procedural controls governing system operation. The frequency is controlled by the Surveillance Frequency Control Program. The surveillance frequency may vary by each location's susceptibility to gas accumulation.

3/4.9.6 DELETED

3/4.9.7 DELETED

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

In MODE 6 the shutdown cooling trains are the primary means of heat removal. One SDC train provides sufficient heat removal capability. However, to provide redundant paths for heat removal either two SDC trains are required to be OPERABLE and one SDC train must be in operation, or one SDC train is required to be OPERABLE and in operation with the refueling cavity water level ≥ 23 feet above the reactor vessel flange. This volume of water in the refueling cavity will provide a large heat sink in the event of a failure of the operating SDC train. Any exception to these requirements are contained in the LCO Notes.

An OPERABLE SDC train, for plant operation in MODE 6, includes a pump, heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine RCS temperature. In addition, sufficient portions of the Reactor Building Closed Cooling Water (RBCCW) and Service Water (SW) Systems shall be OPERABLE as required to provide cooling to the SDC heat exchanger. The flow path starts at the RCS hot leg and is returned to the RCS cold legs. An OPERABLE SDC train consists of the following equipment:

Management of gas voids is important to SDC System OPERABILITY.

1. An OPERABLE SDC pump (low pressure safety injection pump);

2. The associated SDC heat exchanger from the same facility as the SDC pump;

3. An RBCCW pump, powered from the same facility as the SDC pump, and RBCCW heat exchanger capable of cooling the associated SDC heat exchanger;

4. A SW pump, powered from the same facility as the SDC pump, capable of supplying cooling water to the associated RBCCW heat exchanger; and

5. All valves required to support SDC System operation are in the required position or are capable of being placed in the required position.

In MODE 6, two OPERABLE SDC trains require 2 SDC pumps, 2 SDC heat exchangers, 2 RBCCW pumps, 2 RBCCW heat exchangers, and 2 SW pumps. In addition, 2 RBCCW headers are required to provide cooling to the SDC heat exchangers, but only 1 SW header is required to support the SDC trains. The equipment specified is sufficient to address a single active failure of the SDC System and associated support systems.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION (Continued)

In addition, two SDC trains can be considered OPERABLE, with only one 125-volt D.C. bus train OPERABLE, in accordance with Limiting Condition for Operation (LCO) 3.8.2.4. 2-SI-306 and 2-SI-657 are both powered from the same 125-volt D.C. bus, on Facility 1. Should these valves reposition due to a loss of power, SDC would no longer be aligned to cool the RCS. However, a designated operator is assigned to reposition these valves as necessary in the event 125-volt D.C. power is lost. Consistent with the bases for LCO 3.8.2.4, the 125-volt D.C. support system operability requirements for both trains of SDC are satisfied in MODE 6 with at least one 125-volt D.C. bus train OPERABLE and the 125-volt D.C. buses cross-tied.

Either SDC pump may be aligned to the refueling water storage tank (RWST) to support filling the fueling cavity or for performance of required testing. A SDC pump may also be used to transfer water from the refueling cavity to the RWST. In addition, either SDC pump may be aligned to draw a suction on the spent fuel pool (SFP) through 2-RW-11 and 2-SI-442 instead of the normal SDC suction flow path, provided the SFP transfer canal gate valve 2-RW-280 is open under administrative control (e.g., caution tagged). When using this alternate SDC flow path, it will be necessary to secure the SFP cooling pumps, and limit SDC flow as specified in the appropriate procedure, to prevent vortexing in the suction piping. The evaluation of this alternate SDC flow path assumed that this flow path will not be used during a refueling outage until after the completion of the fuel shuffle such that approximately one third of the reactor core will contain new fuel. By waiting until the completion of the fuel shuffle, sufficient time (at least 14 days from reactor shutdown) will have elapsed to ensure the limited SDC flow rate specified for this alternate lineup will be adequate for decay heat removal from the reactor core and the spent fuel pool. In addition, CORE ALTERATIONS shall be suspended when using this alternate flow path, and this flow path should only be used for short time periods, approximately 12 hours. If the alternate flow path is expected to be used for greater than 24 hours, or the decay heat load will not be bounded as previously discussed, further evaluation is required to ensure that this alternate flow path is acceptable.

These alternate lineups do not affect the OPERABILITY of the SDC train. In addition, these alternate lineups will satisfy the requirement for a SDC train to be in operation if the minimum required SDC flow through the reactor core is maintained.

Insert F →

In MODE 6, with the refueling cavity filled to ≥ 23 feet above the reactor vessel flange, both SDC trains may not be in operation for up to 1 hour in each 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because

MPS2 Insert F – SDC Trains Refueling

Insert F, Bases Refueling Operations – SDC and Coolant Circulation

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required SDC loop(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Surveillance Requirement 4.9.8.1.2 and 4.9.8.2.3 are performed for SDC System locations susceptible to gas accumulation and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

The monitoring frequency takes into consideration the gradual nature of gas accumulation in the SDC System piping and the procedural controls governing system operation. The frequency is controlled by the Surveillance Frequency Control Program. The surveillance frequency may vary by each location's susceptibility to gas accumulation.