

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

MILLSTONE - UNIT 2

3/4 3-12

Amendment No. 15, PB

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2	(d)	2	1, 2, 3, 4	1   61
b. Containment Pressure - High	4	2	3	1, 2, 3	2   61
c. Pressurizer Pressure - Low	4	2	3	1, 2(e), 3(a)	2   61
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	1   61
b. Containment Pressure -- High - High	4	2(b)	3	1, 2, 3	2   61
3. CONTAINMENT ISOLATION (CIAS)					
a. Manual CIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	1   61
b. Manual SIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	1   61
c. Containment Pressure - High	4	2	3	1, 2, 3	2   61
d. Pressurizer Pressure - Low	4	2	3	1, 2(e), 3(a)	2   61

TABLE 3.3-3 (Continued)

TABLE NOTATION

- (a) Trip function may be bypassed when pressurizer pressure is  $< 1750$  psia; bypass shall be automatically removed when pressurizer pressure is  $\geq 1750$  psia.
- (b) An SIAS signal is first necessary to enable CSAS logic.
- (c) Trip function may be bypassed below 600 psia; bypass shall be automatically removed at or above 600 psia.
- (d) ~~Deleted~~ *In MODE 4 the HPSI pumps are not required to start automatically on a SIAS.*
- (e) Trip may be bypassed during testing pursuant to Special Test Exception 3.10.3.

ACTION STATEMENTS

- ACTION 1 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.
- ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels and with the pressurizer pressure:
  - a.  $< 1750$  psia; immediately place the inoperable channel in the bypassed condition; restore the inoperable channel to OPERABLE status prior to increasing the pressurizer pressure above 1750 psia.
  - b.  $\geq 1750$  psia, operation may continue with the inoperable channel in the bypassed condition, provided the following conditions are satisfied:
    - 1. All functional units receiving an input from the bypassed channel are also placed in the bypassed condition.
    - 2. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be removed from service for up to 2 hours for surveillance testing per Specification 4.3.2.1 provided one of the inoperable channels is placed in the tripped condition.

REACTOR COOLANT SYSTEM

July 1, 1998

OVERPRESSURE PROTECTION SYSTEMS

NO CHANGE  
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LIMITING CONDITION FOR OPERATION

3.4.9.3 A Low Temperature Overpressure Protection (LTOP) System, as specified below, shall be OPERABLE.

- a. MODE 4, and MODE 5 with all RCS cold leg temperature  $> 190^{\circ}\text{F}$ :
  1. Maximum of two charging pumps and one HPSI pump may be capable of injecting into the RCS; and
  2. Two OPERABLE PORVs with a lift setpoint of  $\leq 415$  psia.
- b. MODE 5 with any RCS cold leg temperature  $\leq 190^{\circ}\text{F}$ , and MODE 6 either:
  1. Maximum of one charging pump may be capable of injecting into the RCS; and
  2. Two OPERABLE PORVs with a lift setpoint of  $\leq 415$  psia.

OR

  3. Maximum of two charging pumps and one HPSI pump may be capable of injecting into the RCS; and
  4. The RCS is depressurized and an RCS vent of  $\geq 2.2$  sq. inches.

APPLICABILITY: MODE 4 when the temperature of any RCS cold leg is less than or equal to  $275^{\circ}\text{F}$ , MODE 5, and MODE 6 when the head is on the reactor vessel.

ACTION:

- a. With one required PORV inoperable in MODE 4, restore the inoperable PORV to OPERABLE status within 7 days or depressurize and vent the RCS through a  $\geq 2.2$  square inch vent within the next 8 hours.
- b. With one required PORV inoperable in MODES 5 or 6, either restore inoperable PORV to OPERABLE status within 24 hours or depressurize and vent the RCS through a  $\geq 2.2$  square inch vent within the next 8 hours.
- c. With both required PORVs inoperable, depressurize and vent the RCS through a  $\geq 2.2$  square inch vent within 8 hours.
- d. With more than the maximum allowed pumps capable of injecting into the RCS, take immediate action to comply with 3.4.9.3.
- e. In the event either the PORVs or the RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs or RCS vent(s) on the transient, and any corrective action necessary to prevent recurrence.
- f. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENT

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by:

- a. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required OPERABLE and at least once per 31 days thereafter when the PORV is required OPERABLE.
- b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 months.
- c. Verifying the PORV block valve is open at least once per 72 hours when the PORV is being used for overpressure protection.
- d. Testing in accordance with the inservice test requirements of Specification 4.0.5.

4.4.9.3.2 Verify no more than the maximum allowed number of charging pumps are capable of injecting into the RCS at least once per 12 hours. This is accomplished by verifying the motor circuit breakers for the charging pumps not intended to be capable of injecting into the RCS are in the open position.

4.4.9.3.3 Verify no more than the maximum allowed number of high pressure safety injection pumps are capable of injecting into the RCS at least once per 12 hours. This is accomplished for the high pressure safety injection pumps not intended to be capable of injecting into the RCS by verifying that either the motor circuit breakers have been disconnected from their power supply circuits, or by shutting and tagging the discharge valve with the key lock on the control panel (2-SI-654 or 2-SI-656).

4.4.9.3.4 Verify the required RCS vent is open at least once per 31 days when the vent pathway is provided by vent valve(s) that is(are) locked, sealed, or otherwise secured in the open position, otherwise, verify the vent pathway at least once per 12 hours.

*for each charging pump prevented from injecting into the RCS by verifying the motor circuit breaker is in the open position.*

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INSERT A - Page 3/4 4-21b

Verify no more than the maximum allowed number of HPSI pumps are capable of injecting into the RCS at least once per 12 hours. This is accomplished for each HPSI pump prevented from injecting into the RCS by:

- a. Racking down the motor circuit breaker from the power supply circuit; or
- b. Shutting and tagging the discharge valve with the key lock on the control panel (2-SI-654 or 2-SI-656); or
- c. Placing the pump control switch in the pull-to-lock position and removing the breaker control power fuses; or
- d. Placing the pump control switch in the pull-to-lock position and shutting the discharge valve with the key lock on the control panel (2-SI-654 or 2-SI-656).

ECCS SUBSYSTEMS -  $T_{avg} < 300^{\circ}F$

LIMITING CONDITION FOR OPERATION

- 3.5.3 One ECCS subsystem <sup>\*\*\*\*</sup> 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 subsystem OPERABLE, restore at least one ECCS subsystem to OPERABLE status within one hour or be in COLD SHUTDOWN within the next 20 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 subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

\* With pressurizer pressure < 1750 psia.

\*\* 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.

\*\*\* 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.

← INSERT B

INSERT B - Page 3/4 5-7

\*\*\*\* 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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The Low Temperature Overpressure Protection (LTOP) System provides a physical barrier against exceeding the 10CFR50 Appendix G pressure/temperature limits during low temperature RCS operation either with a steam bubble in the pressurizer or during water solid conditions. This system consists of either two PORVs (each PORV is equivalent to a vent of approximately 1.4 square inches) with a pressure setpoint  $\leq 415$  psia, or an RCS vent of sufficient size. Analysis has confirmed that the design basis mass addition transient discussed below will be mitigated by operation of the PORVs or by establishing an RCS vent of sufficient size.

The LTOP System is required to be OPERABLE when RCS cold leg temperature is at or below 275°F (Technical Specification 3.4.9.3). However, if the RCS is in MODE 6 and the reactor vessel head has been removed, a vent of sufficient size has been established such that RCS pressurization is not possible. Therefore, an LTOP System is not required (Technical Specification 3.4.9.3 is not applicable).

The LTOP System is armed at a temperature which exceeds the limiting  $1/4t$   $RT_{NOT}$  plus 90°F as required by NUREG-0800 (i.e., SRP), Branch Technical Position RSB 5-2. For the operating period up to 20 EFPY, the limiting  $1/4t$   $RT_{NOT}$  is 145°F which results in a minimum LTOP System enable temperature of at least 263°F when corrected for instrument uncertainty. The current value of 275°F will be retained.

The mass input analysis performed to ensure the LTOP System is capable of protecting the reactor vessel assumes that all pumps capable of injecting into the RCS start, and then one PORV fails to actuate (single active failure). Since the PORVs have limited relief capability, certain administrative restrictions have been implemented to ensure that the mass input transient will not exceed the relief capacity of a PORV. The analysis has determined two PORVs (assuming one PORV fails) are sufficient if the mass addition transient is limited to the inadvertent start of one high pressure safety injection (HPSI) pump and two charging pumps when RCS temperature is at or below 275°F and above 190°F, and the inadvertent start of one charging pump when RCS temperature is at or below 190°F.

The assumed active failure of one PORV results in an equivalent RCS vent size of approximately 1.4 square inches when the one remaining PORV opens. Therefore, a passive vent of at least 1.4 square inches can be substituted for the PORVs. However, a vent size of at least 2.2 square inches will be required when venting the RCS. If the RCS is depressurized and vented through at least a 2.2 square inch vent, the peak RCS pressure, resulting from the maximum mass input transient allowed by Technical Specification 3.4.9.3, will not exceed 300 psig (SDC System suction side design pressure).

When the RCS is at or below 190°F, additional pumping capacity can be made capable of injecting into the RCS by establishing an RCS vent of at least 2.2 square inches. Removing a pressurizer PORV or the pressurizer manway will result in a passive vent of at least 2.2 square inches. Additional methods to establish the required RCS vent are acceptable, provided the proposed vent has been evaluated to ensure the flow characteristics are equivalent to one of these.

Establishing a pressurizer steam bubble of sufficient size will be sufficient to protect the reactor vessel from the energy addition transient associated with the start of an RCP, provided the restrictions contained in Technical Specification 3.4.1.3 are met. These restrictions limit the heat



## BASES

input from the secondary system. They also ensure sufficient steam volume exists in the pressurizer to accommodate the insurge. No credit for PORV actuation was assumed in the LTOP analysis of the energy addition transient.

The restrictions apply only to the start of the first RCP. Once at least one RCP is running, equilibrium is achieved between the primary and secondary temperatures, eliminating any significant energy addition associated with the start of the second RCP.

The LTOP restrictions are based on RCS cold leg temperature. This temperature will be determined by using RCS cold leg temperature indication when RCPs are running, or natural circulation if it is occurring. Otherwise, SDC return temperature indication will be used.

Restrictions on RCS makeup pumping capacity are included in Technical Specification 3.4.9.3. These restrictions are based on balancing the requirements for LTOP and shutdown risk. For shutdown risk reduction, it is desirable to have maximum makeup capacity and to maintain the RCS full (not vented). However, for LTOP it is desirable to minimize makeup capacity and vent the RCS. To satisfy these competing requirements, makeup pumps can be made not capable of injecting, but available at short notice. A pump can be considered to be not capable of injecting into the RCS if the pump breaker is racked ~~out~~ <sup>down</sup> under administrative control. ~~An alternate method is to maintain the pump discharge valve closed under administrative control.~~ These methods prevent inadvertent pump injections while allowing manual actions to rapidly restore the makeup capability if conditions require the use of additional charging or HPSI pumps for makeup in the event of a loss of RCS inventory or reduction in shutdown margin.

If a loss of RCS inventory or reduction in shutdown margin <sup>INSERT C</sup> event occurs, the appropriate response will be to correct the situation by starting RCS makeup pumps. If the loss of inventory or shutdown margin is significant, this may necessitate the use of additional RCS makeup pumps that are being maintained not capable of injecting into the RCS in accordance with Technical Specification 3.4.9.3. The use of these additional pumps to restore RCS inventory or shutdown margin will require entry into the associated action statement. The action statement requires immediate action to comply with the specification. The restoration of RCS inventory or shutdown margin can be considered to be part of the immediate action to restore the additional RCS makeup pumps to a not capable of injecting status. While recovering RCS inventory or shutdown margin, RCS pressure will be maintained below the Appendix G limits. After RCS inventory or shutdown margin has been restored, the additional pumps should be immediately made not capable of injecting and the action statement exited.

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Alternate methods include placing the pump control switch in pull-to-lock with the associated discharge valve closed, placing the pump control switch in pull-to-lock with the breaker control power fuses removed, or maintaining the associated discharge valve closed under administrative control.

NO CHANGE  
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An exception to Technical Specification 3.0.4 is specified for Technical Specification 3.4.9.3 to allow a plant cooldown to MODE 5 if one or both PORVs are inoperable. MODE 5 conditions may be necessary to repair the PORV(s).

3/4.4.10 STRUCTURAL INTEGRITY

The inservice inspection and testing programs for ASME Code Class 1, 2 and 3 components ensure that the structural integrity and operational readiness of these components will be maintained at an acceptable level throughout the life of the plant. These programs are in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR Part 50.55a(g) except where specific written relief has been granted by the Commission pursuant to 10 CFR Part 50.55a(g)(6)(i).

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

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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.

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.

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 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 actual inputs into the safety analysis for HPSI and LPSI pumps differential pressure (discharge-suction) when running on recirculation are 1209 and 150 psi, respectively. The acceptance criteria in the Technical Specifications were adjusted upward to account for instrument uncertainties and drift.

# EMERGENCY CORE COOLING SYSTEMS

## BASES

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.

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.

INSERT D  
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

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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.

EMERGENCY CORE COOLING SYSTEMS

BASES

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June 25, 1998

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.

TSCR  
2-5-98

Docket No. 50-336  
B16951

Attachment 4

Millstone Nuclear Power Station, Unit No. 2  
Proposed Revision to Technical Specifications  
Shutdown Cooling System Overpressurization  
Retyped Pages

October 1998



TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
1. SAFETY INJECTION (SIAS)(d)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	1
b. Containment Pressure - High	4	2	3	1, 2, 3	2
c. Pressurizer Pressure - Low	4	2	3	1, 2(e), 3(a)	2
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	1
b. Containment Pressure-- High - High	4	2(b)	3	1, 2, 3	2
3. CONTAINMENT ISOLATION (CIAS)					
a. Manual CIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	1
b. Manual SIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	1
c. Containment Pressure - High	4	2	3	1, 2, 3	2
d. Pressurizer Pressure - Low	4	2	3	1, 2(e), 3(a)	2

TABLE 3.3-3 (Continued)

TABLE NOTATION

- (a) Trip function may be bypassed when pressurizer pressure is  $< 1750$  psia; bypass shall be automatically removed when pressurizer pressure is  $\geq 1750$  psia.
- (b) An SIAS signal is first necessary to enable CSAS logic.
- (c) Trip function may be bypassed below 600 psia; bypass shall be automatically removed at or above 600 psia.
- (d) In MODE 4 the HPSI pumps are not required to start automatically on a SIAS.
- (e) Trip may be bypassed during testing pursuant to Special Test Exception 3.10.3.

ACTION STATEMENTS

- ACTION 1 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.
- ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels and with the pressurizer pressure:
- a.  $< 1750$  psia; immediately place the inoperable channel in the bypassed condition; restore the inoperable channel to OPERABLE status prior to increasing the pressurizer pressure above 1750 psia.
  - b.  $\geq 1750$  psia, operation may continue with the inoperable channel in the bypassed condition, provided the following conditions are satisfied:
    - 1. All functional units receiving an input from the bypassed channel are also placed in the bypassed condition.
    - 2. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be removed from service for up to 2 hours for surveillance testing per Specification 4.3.2.1 provided one of the inoperable channels is placed in the tripped condition.

## REACTOR COOLANT SYSTEM

### SURVEILLANCE REQUIREMENT

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4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by:

- a. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required OPERABLE and at least once per 31 days thereafter when the PORV is required OPERABLE.
- b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 months.
- c. Verifying the PORV block valve is open at least once per 72 hours when the PORV is being used for overpressure protection.
- d. Testing in accordance with the inservice test requirements of Specification 4.0.5.

4.4.9.3.2 Verify no more than the maximum allowed number of charging pumps are capable of injecting into the RCS at least once per 12 hours. This is accomplished for each charging pump prevented from injecting into the RCS by verifying the motor circuit breaker is in the open position.

4.4.9.3.3 Verify no more than the maximum allowed number of HPSI pumps are capable of injecting into the RCS at least once per 12 hours. This is accomplished for each HPSI pump prevented from injecting into the RCS by:

- a. Racking down the motor circuit breaker from the power supply circuit; or
- b. Shutting and tagging the discharge valve with the key lock on the control panel (2-SI-654 or 2-SI-656); or
- c. Placing the pump control switch in the pull-to-lock position and removing the breaker control power fuses; or
- d. Placing the pump control switch in the pull-to-lock position and shutting the discharge valve with the key lock on the control panel (2-SI-654 or 2-SI-656).

4.4.9.3.4 Verify the required RCS vent is open at least once per 31 days when the vent pathway is provided by vent valve(s) that is(are) locked, sealed, or otherwise secured in the open position, otherwise, verify the vent pathway at least once per 12 hours.

## EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS -  $T_{avg} < 300^{\circ}\text{F}$

### LIMITING CONDITION FOR OPERATION

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- 3.5.3 One ECCS subsystem comprised of the following shall be OPERABLE:
- One OPERABLE\*\*\*\* high-pressure safety injection pump\*\*, and
  - 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:

- With no ECCS subsystem OPERABLE, restore at least one ECCS subsystem to OPERABLE status within one hour or be in COLD SHUTDOWN within the next 20 hours.
- 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

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4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

- \* With pressurizer pressure  $< 1750$  psia.
- \*\* 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.
- \*\*\* 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.
- \*\*\*\* 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.

## REACTOR COOLANT SYSTEM

### BASES

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input from the secondary system. They also ensure sufficient steam volume exists in the pressurizer to accommodate the insurge. No credit for PORV actuation was assumed in the LTOP analysis of the energy addition transient.

The restrictions apply only to the start of the first RCP. Once at least one RCP is running, equilibrium is achieved between the primary and secondary temperatures, eliminating any significant energy addition associated with the start of the second RCP.

The LTOP restrictions are based on RCS cold leg temperature. This temperature will be determined by using RCS cold leg temperature indication when RCPs are running, or natural circulation if it is occurring. Otherwise, SDC return temperature indication will be used.

Restrictions on RCS makeup pumping capacity are included in Technical Specification 3.4.9.3. These restrictions are based on balancing the requirements for LTOP and shutdown risk. For shutdown risk reduction, it is desirable to have maximum makeup capacity and to maintain the RCS full (not vented). However, for LTOP it is desirable to minimize makeup capacity and vent the RCS. To satisfy these competing requirements, makeup pumps can be made not capable of injecting, but available at short notice. A pump can be considered to be not capable of injecting into the RCS if the pump breaker is racked down under administrative control. Alternate methods include placing the pump control switch in pull-to-lock with the discharge valve closed, placing the pump control switch in pull-to-lock with the breaker control power fuses removed, or maintaining the associated discharge valve closed under administrative control. These methods prevent inadvertent pump injections while allowing manual actions to rapidly restore the makeup capability if conditions require the use of additional charging or HPSI pumps for makeup in the event of a loss of RCS inventory or reduction in shutdown margin.

If a loss of RCS inventory or reduction in shutdown margin event occurs, the appropriate response will be to correct the situation by starting RCS makeup pumps. If the loss of inventory or shutdown margin is significant, this may necessitate the use of additional RCS makeup pumps that are being maintained not capable of injecting into the RCS in accordance with Technical Specification 3.4.9.3. The use of these additional pumps to restore RCS inventory or shutdown margin will require entry into the associated action statement. The action statement requires immediate action to comply with the specification. The restoration of RCS inventory or shutdown margin can be considered to be part of the immediate action to restore the additional RCS makeup pumps to a not capable of injecting status. While recovering RCS inventory or shutdown margin, RCS pressure will be maintained below the Appendix G limits. After RCS inventory or shutdown margin has been restored, the additional pumps should be immediately made not capable of injecting and the action statement exited.

## EMERGENCY CORE COOLING SYSTEMS

### BASES

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.

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