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TSB2 - TECHNICAL SPECIFICATIONS BASES UNIT 2 MANUAL

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## SSES MANUAL

Manual Name: TSB2

Manual Title: TECHNICAL SPECIFICATIONS BASES UNIT 2 MANUAL

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B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System-Hot Shutdown

BASES

**BACKGROUND** Irradiated fuel in the shutdown reactor core generates heat during the decay of fission products and increases the temperature of the reactor coolant. This decay heat must be removed to reduce the temperature of the reactor coolant to  $\leq 200^{\circ}\text{F}$ . This decay heat removal is in preparation for performing refueling or maintenance operations, or for keeping the reactor in the Hot Shutdown condition.

The shutdown cooling function of the RHR System provides decay heat removal and is manually controlled. Each RHR loop consists of two motor driven pumps, a heat exchanger, and associated piping and valves. Both loops have a common suction from the same recirculation loop. Each pump discharges the reactor coolant, after circulation through the respective heat exchanger, to the reactor via the associated recirculation loop. The RHR heat exchangers transfer heat to the RHR Service Water System (LCO 3.7.1, "Residual Heat Removal Service Water (RHRSW) System").

**APPLICABLE SAFETY ANALYSES** Decay heat removal by operation of the RHR System in the shutdown cooling mode is not required for mitigation of any event or accident evaluated in the safety analyses. Decay heat removal is, however, an important safety function that must be accomplished or core damage could result. Although the RHR shutdown cooling subsystem does not meet a specific criterion of the NRC Policy Statement (Ref. 1), it was identified in the NRC Policy Statement as a significant contributor to risk reduction. Therefore, the RHR Shutdown Cooling System is retained as a Technical Specification.

**LCO** Two RHR shutdown cooling subsystems are required to be OPERABLE, and when no recirculation pump is in operation, one shutdown cooling subsystem must be in operation. An OPERABLE RHR shutdown cooling subsystem consists of one OPERABLE RHR pump, one heat exchanger, and the associated piping and valves. The two subsystems have a common suction source and are allowed to have a common heat exchanger and

(continued)



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BASES

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LCO  
(continued)

common discharge piping. Thus, to meet the LCO, both pumps in one loop or one pump in each of the two loops must be OPERABLE. Since the piping and heat exchangers are passive components that are assumed not to fail, they are allowed to be common to both subsystems. Each shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. In MODE 3, one RHR shutdown cooling subsystem can provide the required cooling, but two subsystems are required to be OPERABLE to provide redundancy. Operation of one subsystem can maintain or reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required.

Note 1 permits both RHR shutdown cooling subsystems to be shut down for a period of 2 hours in an 8 hour period. Note 2 allows one RHR shutdown cooling subsystem to be inoperable for up to 2 hours for the performance of Surveillance tests. These tests may be on the affected RHR System or on some other plant system or component that necessitates placing the RHR System in an inoperable status during the performance. This is permitted because the core heat generation can be low enough and the heatup rate slow enough to allow some changes to the RHR subsystems or other operations requiring RHR flow interruption and loss of redundancy.

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APPLICABILITY

In MODE 3 with reactor steam dome pressure below the RHR cut in permissive pressure (i.e., the actual pressure at which the interlock resets) the RHR System may be operated in the shutdown cooling mode to remove decay heat to reduce or maintain coolant temperature. Otherwise, a recirculation pump is required to be in operation.

In MODES 1 and 2, and in MODE 3 with reactor steam dome pressure greater than or equal to the RHR cut in permissive pressure, this LCO is not applicable. Operation of the RHR System in the shutdown cooling mode is not allowed above this pressure because the RCS pressure may exceed the design pressure of the shutdown cooling piping. Decay heat removal at reactor pressures greater than or equal to the RHR cut in permissive pressure is typically accomplished by condensing

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(continued)

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BASES

APPLICABILITY  
(continued)      the steam in the main condenser. Additionally, in MODE 2 below this pressure, the OPERABILITY requirements for the Emergency Core Cooling Systems (ECCS) (LCO 3.5.1, "ECCS-Operating") do not allow placing the RHR shutdown cooling subsystem into operation.

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System-Cold Shutdown"; LCO 3.9.7, "Residual Heat Removal (RHR)-High Water Level"; and LCO 3.9.8, "Residual Heat Removal (RHR)-Low Water Level."

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ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1, A.2, and A.3

With one required RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the inoperable subsystem must be restored to OPERABLE status

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(continued)

## BASES

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### ACTIONS      A.1, A.2, and A.3 (continued)

without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal. The overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore, an alternate method of decay heat removal must be provided.

With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability.

This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

The required cooling capacity of the alternate method must be ensured by verifying (by calculation or demonstration) its capability to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Spent Fuel Pool Cooling System and the Reactor Water Cleanup System.

However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.

### B.1, B.2, and B.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function

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(continued)

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BASES

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ACTIONS                    B.1, B.2, and B.3 (continued)

and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

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SURVEILLANCE            SR 3.4.8.1  
REQUIREMENTS

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after the pressure interlock that isolates the system resets, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

REFERENCES                1. Final Policy Statement on Technical Specifications Improvements,  
July 22, 1993 (58 FR 39132).

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B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.9 Residual Heat Removal (RHR) Shutdown Cooling System-Cold Shutdown

**BASES**

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**BACKGROUND** Irradiated fuel in the shutdown reactor core generates heat during the decay of fission products and increases the temperature of the reactor coolant. This decay heat must be removed to maintain the temperature of the reactor coolant  $\leq 200^{\circ}\text{F}$ . This decay heat removal is in preparation for performing refueling or maintenance operations, or for keeping the reactor in the Cold Shutdown condition.

The shutdown cooling function of the RHR System provides decay heat removal and is manually controlled. Each RHR loop consists of two motor driven pumps, a heat exchanger, and associated piping and valves. Both loops have a common suction from the same recirculation loop. Each pump discharges the reactor coolant, after circulation through the respective heat exchanger, to the reactor via the associated recirculation loop. The RHR heat exchangers transfer heat to the RHR Service Water System.

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**APPLICABLE SAFETY ANALYSES** Decay heat removal by operation of the RHR System in the shutdown cooling mode is not required for mitigation of any event or accident evaluated in the safety analyses. Decay heat removal is, however, an important safety function that must be accomplished or core damage could result. Although the RHR Shutdown Cooling System does not meet a specific criterion of the NRC Policy Statement (Ref. 1), it was identified in the NRC Policy Statement as a significant contributor to risk reduction. Therefore, the RHR Shutdown Cooling System is retained as a Technical Specification.

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**LCO** Two RHR shutdown cooling subsystems are required to be OPERABLE, and when no recirculation pump is in operation, one RHR shutdown cooling subsystem must be in operation. An OPERABLE RHR shutdown cooling subsystem consists of an RHR pump with an associated RHRSW pump, a heat exchanger, valves, piping, instruments, and controls to ensure the corresponding flow paths are OPERABLE. On the primary side, the two subsystems have a common suction source and are

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BASES

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LCO  
(continued)

allowed to have a common heat exchanger and common discharge piping. Thus, to meet the LCO, both pumps in one loop or one pump in each of the two loops must be OPERABLE. Since the piping and heat exchangers are passive components that are assumed not to fail, they are allowed to be common to both subsystems. For each pump required to be OPERABLE on the primary (RHR) side, an associated RHRSW pump must be OPERABLE on the secondary side to transport decay heat to the UHS. Therefore, if two RHR pumps (and one heat exchanger) in the same loop are being used to comprise two shutdown cooling subsystems, the two RHRSW pumps (one from Unit 1 and one from Unit 2) which are capable of servicing the subject heat exchanger must be OPERABLE.

In MODE 4, the RHR cross tie valves (HV-151-F010A and B) may be opened to allow pumps in one loop to discharge through the opposite recirculation loop to make a complete subsystem. Additionally, each shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. In MODE 4, one RHR shutdown cooling subsystem can provide the required cooling, but two subsystems are required to be OPERABLE to provide redundancy. Operation of one subsystem can maintain or reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required.

Note 1 permits both RHR shutdown cooling subsystems to be shut down for a period of 2 hours in an 8 hour period. Note 2 allows one RHR shutdown cooling subsystem to be inoperable for up to 2 hours for the performance of Surveillance tests. These tests may be on the affected RHR System or on some other plant system or component that necessitates placing the RHR System in an inoperable status during the performance. This is permitted because the core heat generation can be low enough and the heatup rate slow enough to allow some changes to the RHR subsystems or other operations requiring RHR flow interruption and loss of redundancy.

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APPLICABILITY

In MODE 4, the RHR Shutdown Cooling System may be operated in the shutdown cooling mode to remove decay heat to

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## BASES

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### APPLICABILITY (continued)

maintain coolant temperature below 200°F. Otherwise, a recirculation pump is required to be in operation.

In MODES 1 and 2, and in MODE 3 with reactor steam dome pressure greater than or equal to the RHR cut in permissive pressure, this LCO is not applicable. Operation of the RHR System in the shutdown cooling mode is not allowed above this pressure because the RCS pressure may exceed the design pressure of the shutdown cooling piping. Decay heat removal at reactor pressures greater than or equal to the RHR cut in permissive pressure is typically accomplished by condensing the steam in the main condenser. Additionally, in MODE 2 below this pressure, the OPERABILITY requirements for the Emergency Core Cooling Systems (ECCS) (LCO 3.5.1, "ECCS-Operating") do not allow placing the RHR shutdown cooling subsystem into operation.

The requirements for decay heat removal in MODE 3 below the cut in permissive pressure and in MODE 5 are discussed in LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System-Hot Shutdown"; LCO 3.9.7, "Residual Heat Removal (RHR)-High Water Level"; and LCO 3.9.8, "Residual Heat Removal (RHR)-Low Water Level."

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### ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

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(continued)

## BASES

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### ACTIONS (continued)

#### A.1

With one of the two required RHR shutdown cooling subsystems inoperable, except as permitted by LCO Note 2, the remaining subsystem is capable of providing the required decay heat removal. However, the overall reliability is reduced. Therefore, an alternate method of decay heat removal must be provided. With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

The required cooling capacity of the alternate method must be ensured by verifying (by calculation or demonstration) its capability to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Reactor Water Cleanup System.

#### B.1 and B.2

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, and until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. The alternate method may use forced or natural circulation. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

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(continued)



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BASES

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ACTIONS

B.1 and B.2 (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR Shutdown Cooling System or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

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SURVEILLANCE  
REQUIREMENTS

SR 3.4.9.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.

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REFERENCES

1. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).
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## B 3.6 CONTAINMENT SYSTEMS

### B 3.6.4.2 Secondary Containment Isolation Valves (SCIVs)

#### BASES

**BACKGROUND** The function of the SCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) (Ref. 1). Secondary containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that fission products that leak from primary containment into secondary containment following a DBA, or that are released during certain operations when primary containment is not required to be OPERABLE or take place outside primary containment, are maintained within the secondary containment boundary.

The OPERABILITY requirements for SCIVs help ensure that an adequate secondary containment boundary is maintained during and after an accident by minimizing potential paths to the environment. These isolation devices consist of either passive devices or active (automatic) devices. Manual valves or dampers, de-activated automatic valves or dampers secured in their closed position (including check valves with flow through the valve secured), and blind flanges are considered passive devices.

Automatic SCIVs close on a secondary containment isolation signal to establish a boundary for untreated radioactive material within secondary containment following a DBA or other accidents.

Other non-sealed penetrations which cross a secondary containment boundary are isolated by the use of valves in the closed position or blind flanges.

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**APPLICABLE SAFETY ANALYSES** The SCIVs must be OPERABLE to ensure the secondary containment barrier to fission product releases is established. The principal accidents for which the secondary containment boundary is required are a loss of coolant accident (Ref. 1) and a fuel handling accident inside secondary containment (Ref. 2). The secondary containment performs no active function in response to either of these limiting events, but the boundary

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(continued)

## BASES

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### APPLICABLE SAFETY ANALYSES (continued)

established by SCIVs is required to ensure that leakage from the primary containment is processed by the Standby Gas Treatment (SGT) System before being released to the environment.

Maintaining SCIVs OPERABLE with isolation times within limits ensures that fission products will remain trapped inside secondary containment so that they can be treated by the SGT System prior to discharge to the environment.

SCIVs satisfy Criterion 3 of the NRC Policy Statement (Ref. 3).

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### LCO

SCIVs that form a part of the secondary containment boundary are required to be OPERABLE. Depending on the configuration of the secondary containment only specific SCIVs are required. The SCIV safety function is related to control of offsite radiation releases resulting from DBAs.

The automatic isolation valves are considered OPERABLE when their isolation times are within limits and the valves actuate on an automatic isolation signal. The valves covered by this LCO, along with their associated stroke times, are listed in Table B 3.6.4.2-1.

The normally closed isolation valves or blind flanges are considered OPERABLE when manual valves are closed or open in accordance with appropriate administrative controls, automatic SCIVs are deactivated and secured in their closed position, or blind flanges are in place. These passive isolation valves or devices are listed in Table B3.6.4.2-2. Penetrations closed with sealants are considered part of the secondary containment boundary and are not considered penetration flow paths.

Certain plant piping systems (e.g., Service Water, RHR Service Water, Emergency Service Water, Feedwater, etc.) penetrate the secondary containment boundary. The intact piping within secondary containment provides a passive barrier which maintains secondary containment requirements. When the SDHR and temporary chiller system piping is connected and full of water, the piping forms the secondary containment boundary and the passive devices in TS Bases Table B3.6.4.2-2 are no longer required for these systems since the piping forms the barrier. During certain plant evolutions, piping systems may be drained and breached within secondary containment. During the pipe breach, system isolation valves can be used to provide secondary containment isolation. The isolation valve alignment will be controlled when the piping system is breached.

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BASES (continued)

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APPLICABILITY In MODES 1, 2, and 3, a DBA could lead to a fission product release to the primary containment that leaks to the secondary containment. Therefore, the OPERABILITY of SCIVs is required.

In MODES 4 and 5, the probability and consequences of these events are reduced due to pressure and temperature limitations in these MODES. Therefore, maintaining SCIVs OPERABLE is not required in MODE 4 or 5, except for other situations under which significant radioactive releases can be postulated, such as during operations with a potential for draining the reactor vessel (OPDRVs), during CORE ALTERATIONS, or during movement of irradiated fuel assemblies in the secondary containment. Moving irradiated fuel assemblies in the secondary containment may also occur in MODES 1, 2, and 3.

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ACTIONS

The ACTIONS are modified by three Notes. The first Note allows penetration flow paths to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated.

The second Note provides clarification that for the purpose of this LCO separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable SCIV. Complying with the Required Actions may allow for continued operation, and subsequent inoperable SCIVs are governed by subsequent Condition entry and application of associated Required Actions.

The third Note ensures appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable SCIV.

A.1 and A.2

In the event that there are one or more required penetration flow paths with one required SCIV inoperable, the affected penetration flow path(s) must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic SCIV, a closed manual valve, and a blind flange. For penetrations isolated in

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(continued)

## BASES

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### ACTIONS

#### A.1 and A.2 (continued)

accordance with Required Action A.1, the device used to isolate the penetration should be the closest available device to secondary containment. The Required Action must be completed within the 8 hour Completion Time. The specified time period is reasonable considering the time required to isolate the penetration, and the probability of a DBA, which requires the SCIVs to close, occurring during this short time is very low.

For affected penetrations that have been isolated in accordance with Required Action A.1, the affected penetration must be verified to be isolated on a periodic basis. This is necessary to ensure that secondary containment penetrations required to be isolated following an accident, but no longer capable of being automatically isolated, will be in the isolation position should an event occur. The Completion Time of once per 31 days is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low. This Required Action does not require any testing or device manipulation. Rather, it involves verification that the affected penetration remains isolated.

Condition A is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two SCIVs. For penetration flow paths with one SCIV, Condition C provides the appropriate Required Actions.

Required Action A.2 is modified by a Note that applies to devices located in high radiation areas and allows them to be verified closed by use of administrative controls. Allowing verification by administrative controls is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment, once they have been verified to be in the proper position, is low.

#### B.1

With two SCIVs in one or more penetration flow paths inoperable, the affected penetration flow path must be isolated within 4 hours. The method of isolation must

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(continued)

## BASES

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### ACTIONS

#### B.1 (continued)

include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 4 hour Completion Time is reasonable considering the time required to isolate the penetration and the probability of a DBA, which requires the SCIVs to close, occurring during this short time, is very low.

The Condition has been modified by a Note stating that Condition B is only applicable to penetration flow paths with two isolation valves. For penetration flow paths with one SCIV, Condition C provides the appropriate Required Actions.

#### C.1 and C.2

With one or more required penetration flow paths with one required SCIV inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within the 4 hour Completion Time. The Completion Time of 4 hours is reasonable considering the relative stability of the system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting secondary containment OPERABILITY during MODES 1, 2, and 3.

In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration must be verified to be isolated on a periodic basis. This is necessary to ensure that secondary containment penetrations required to be isolated following an accident are isolated.

The Completion Time of once per 31 days for verifying each affected penetration is isolated is appropriate because the

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BASES

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ACTIONS

C.1 and C.2 (continued)

valves are operated under administrative controls and the probability of their misalignment is low.

Condition C is modified by a Note indicating that this Condition is only applicable to penetration flow paths with only one SCIV. For penetration flow paths with two SCIVs, Conditions A and B provide the appropriate Required Actions.

Required Action C.2 is modified by a Note that applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is low.

D.1 and D.2

If any Required Action and associated Completion Time cannot be met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1, E.2, and E.3

If any Required Action and associated Completion Time are not met, the plant must be placed in a condition in which the LCO does not apply. If applicable, CORE ALTERATIONS and the movement of irradiated fuel assemblies in the secondary containment must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be immediately initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

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(continued)

## BASES

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### ACTIONS

#### E.1, E.2, and E.3 (continued)

Required Action E.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving fuel while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

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### SURVEILLANCE REQUIREMENTS

#### SR 3.6.4.2.1

This SR verifies that each secondary containment manual isolation valve and blind flange that is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the secondary containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification (typically visual) that those required SCIVs in secondary containment that are capable of being mispositioned are in the correct position.

Since these SCIVs are readily accessible to personnel during normal operation and verification of their position is relatively easy, the 31 day Frequency was chosen to provide added assurance that the SCIVs are in the correct positions.

Two Notes have been added to this SR. The first Note applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these SCIVs, once they have been verified to be in the proper position, is low.

A second Note has been included to clarify that SCIVs that are open under administrative controls are not required to meet the SR during the time the SCIVs are open.

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BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.6.4.2.2

SCIVs with maximum isolation times specified in Table B 3.6.2.4-1 are tested every 92 days to verify that the isolation time is within limits to demonstrate OPERABILITY. Automatic SCIVs without maximum isolation times specified in Table B 3.6.4.2-1 are tested under the requirements of SR 3.6.4.2.3. The isolation time test ensures that the SCIV will isolate in a time period less than or equal to that assumed in the safety analyses.

SR 3.6.4.2.3

Verifying that each automatic required SCIV closes on a secondary containment isolation signal is required to prevent leakage of radioactive material from secondary containment following a DBA or other accidents. This SR ensures that each automatic SCIV will actuate to the isolation position on a secondary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.2.5 overlaps this SR to provide complete testing of the safety function. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

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REFERENCES

1. FSAR, Section 6.2.
  2. FSAR, Section 15.
  3. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).
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**Table B 3.6.4.2-1**  
**Secondary Containment Ventilation System**  
**Automatic Isolation Dampers**  
**(Page 1 of 1)**

<b>Reactor Building Zone</b>	<b>Valve Number</b>	<b>Valve Description</b>	<b>Type of Valve</b>	<b>Maximum Isolation Time (Seconds)</b>
I	HD-17586 A&B	Supply System Dampers	Automatic Isolation Damper	10.0
I	HD-17524 A&B	Filtered Exhaust System Dampers	Automatic Isolation Damper	10.0
I	HD-17576A&B	Unfiltered Exhaust System Dampers	Automatic Isolation Damper	10.0
II	HD-27586 A&B	Supply System Dampers	Automatic Isolation Damper	10.0
II	HD-27524 A&B	Filtered Exhaust System Dampers	Automatic Isolation Damper	10.0
II	HD-27576 A&B	Unfiltered Exhaust System Dampers	Automatic Isolation Damper	10.0
III	HD-17564 A&B	Supply System Dampers	Automatic Isolation Damper	14.0
III	HD-17514 A&B	Filtered Exhaust System Dampers	Automatic Isolation Damper	6.5
III	HD-17502 A&B	Unfiltered Exhaust System Dampers	Automatic Isolation Damper	6.0
III	HD-27564 A&B	Supply System Dampers	Automatic Isolation Damper	14.0
III	HD-27514 A&B	Filtered Exhaust System Dampers	Automatic Isolation Damper	6.5
III	HD-27502 A&B	Unfiltered Exhaust System Dampers	Automatic Isolation Damper	6.0
N/A	HD-17534A	Zone 3 Airlock I-606	Automatic Isolation Damper	N/A
N/A	HD-17534B	Zone 3 Airlock I-611	Automatic Isolation Damper	N/A
N/A	HD-17534D	Zone 3 Airlock I-803	Automatic Isolation Damper	N/A
N/A	HD-17534E	Zone 3 Airlock I-805	Automatic Isolation Damper	N/A
N/A	HD-17534F	Zone 3 Airlock I-617	Automatic Isolation Damper	N/A
N/A	HD-17534H	Zone 3 Airlock I-618	Automatic Isolation Damper	N/A
N/A	HD-27534A	Zone 3 Airlock II-606	Automatic Isolation Damper	N/A
N/A	HD-27534D	Zone 3 Airlock II-803	Automatic Isolation Damper	N/A
N/A	HD-27534E	Zone 3 Airlock II-805	Automatic Isolation Damper	N/A
N/A	HD-27534G	Zone 3 Airlock C-806	Automatic Isolation Damper	N/A
N/A	HD-27534H	Zone 3 Airlock II-618	Automatic Isolation Damper	N/A
N/A	HD-27534I	Zone 3 Airlock II-609	Automatic Isolation Damper	N/A

**Table B 3.6.4.2-2**  
**Secondary Containment Ventilation System**  
**Passive Isolation Valves or Devices**  
(Page 1 of 3)

Device Number	Device Description	Area/Elev.	Required Position / Notes
X-29-2-44	SDHR System to Fuel Pool Cooling	Yard/670	Blind Flanged / Note 1
X-29-2-45	SDHR System to Fuel Pool Cooling	Yard/670	Blind Flanged / Note 1
110176	SDHR Supply Drain Vlv	29/670	Closed Manual Iso Valve / Note 1
110186	SDHR Discharge Drain Vlv	29/670	Closed Manual Iso Valve / Note 1
110180	SDHR Supply Vent Vlv	29/749	Closed Manual Iso Valve / Note 1
110181	SDHR Discharge Fill Vlv	27/749	Closed Manual Iso Valve / Note 1
110182	SDHR Discharge Vent Vlv	27/749	Closed Manual Iso Valve / Note 1
110187	SDHR Supply Fill Vlv	29/749	Closed Manual Iso Valve / Note 1
210186	SDHR Supply Drain Vlv	33/749	Closed Manual Iso Valve / Note 1
210187	SDHR Supply Vent Vlv	33/749	Closed Manual Iso Valve / Note 1
210191	SDHR Discharge Vent Vlv	30/749	Closed Manual Iso Valve / Note 1
210192	SDHR Discharge Drain Vlv	30/749	Closed Manual Iso Valve / Note 1
210193	SDHR Discharge Vent Vlv	33/749	Closed Manual Iso Valve / Note 1
X-29-2-46	Temporary Chiller to RBCW	Yard/670	Blind Flanged / Note 2
X-29-2-47	Temporary Chiller to RBCW	Yard/670	Blind Flanged / Note 2
X-29-5-95	Temporary Chiller to Unit 1 RBCW	29/749	Blind Flanged / Note 2
X-29-5-96	Temporary Chiller to Unit 1 RBCW	29/749	Blind Flanged / Note 2
X-29-5-91	Temporary Chiller to Unit 2 RBCW	33/749	Blind Flanged / Note 2
X-29-5-92	Temporary Chiller to Unit 2 RBCW	33/749	Blind Flanged / Note 2
187388	RBCW Temp Chiller Discharge Iso Vlv	29/670	Closed Manual Iso Valve / Note 2
187389	RBCW Temp Chiller Supply Iso Vlv	29/670	Closed Manual Iso Valve / Note 2
187390	RBCW Temp Chiller Supply Drain Vlv	29/670	Closed Manual Iso Valve / Note 2
187391	RBCW Temp Chiller Discharge Drain Vlv	29/670	Closed Manual Iso Valve / Note 2
X-28-2-3000	Utility Penetration to Unit 1 East Stairwell	Yard/670	Blind Flanged / Note 3
X-29-2-48	Utility Penetration to Unit 1 RR Bay	Yard/670	Capped / Note 5
X-33-2-3000	Utility Penetration to Unit 2 East Stairwell	Yard/670	Blind Flanged / Note 4
X-28-2-3000	Utility Penetration to Unit 1 East Stairwell	28/670	Blind Flanged / Note 3
X-29-2-48	Utility Penetration to Unit 1 RR Bay	29/670	Capped / Note 5
X-33-2-3000	Utility Penetration to Unit 2 East Stairwell	33/670	Blind Flanged / Note 4
X-29-3-54	Utility Penetration to Unit 1 RBCCW Hx Area	27/683	Blind Flanged / Note 6
X-29-3-55	Utility Penetration to Unit 1 RBCCW Hx Area	27/683	Blind Flanged / Note 6
X-29-5-97	Utility Penetration from Unit 1 RR Bay to Unit 2 Elev. 749	33/749	Capped
X-27-6-42	Diamond Plate Cover over Floor Penetration	27/779'	Installed
X-27-6-92	Instrument Tubing Stubs	27/779'	Capped
X-29-7-4	1" Spare Conduit Threaded Plug	29/818'	Installed
X-30-6-72	Instrument Tubing Stubs	30/779'	Capped
X-30-6-1002	Stairwell #214 Rupture Disc	30/779'	Installed Intact
X-30-6-1003	Airlock II-609 Rupture Disc	30/779'	Installed Intact
X-25-6-1008	Airlock I-606 Rupture Disc	25/779'	Installed Intact
X-29-4-D1-B	Penetration at Door 4330	29/719'	Blind Flange Installed
X-29-4-D1-A	Penetration at Door 4330	29/719'	Blind Flange Installed
X-29-4-D1-B	Penetration at Door 404	33/719'	Blind Flange Installed
X-29-4-D1-A	Penetration at Door 404	33/719'	Blind Flange Installed

**Table B 3.6.4.2-2**  
**Secondary Containment Ventilation System**  
**Passive Isolation Valves or Devices**  
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Device Number	Device Description	Area/Elev.	Required Position / Notes
HD17534C	Airlock I-707 Blind Flange	28/799'	Blind Flange Installed
HD27534C	Airlock II-707 Blind Flange	33/799'	Blind Flange Installed
XD-17513	Isolation damper for Railroad Bay Zone III HVAC Supply	29/799'	Position is dependent on Railroad Bay alignment
XD-17514	Isolation damper for Railroad Bay Zone III HVAC Exhaust	29/719'	Position is dependent on Railroad Bay alignment
XD-12301	PASS Air Flow Damper	11/729'	Closed Damper
XD-22301	PASS Air Flow Damper	22/729'	Closed Damper
161827	HPCI Blowout Steam Vent Drain Valve	25/645'	Closed Manual Iso Valve / Note 3
161828	RCIC Blowout Steam Vent Drain Valve	28/645'	Closed Manual Iso Valve / Note 3
161829	'A' RHR Blowout Steam Vent Drain Valve	29/645'	Closed Manual Iso Valve / Note 3
161830	'B' RHR Blowout Steam Vent Drain Valve	28/645'	Closed Manual Iso Valve / Note 3
261820	RCIC Blowout Steam Vent Drain Valve	33/645'	Closed Manual Iso Valve / Note 4
261821	'A' RHR Blowout Steam Vent Drain Valve	34/645'	Closed Manual Iso Valve / Note 4
261822	'B' RHR Blowout Steam Vent Drain Valve	33/645'	Closed Manual Iso Valve / Note 4
2LRW1810L	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW1810M	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW1810N	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW1810R	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW1810S	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW1703A	Zone II Floor Drain	34-799	Plugged / Note 7
2LRW1615A	Zone II Floor Drain	34-779	Plugged / Note 7
2LRW1100A	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW1100B	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW1100C	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW1100D	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW1100E	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW1100F	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW1100G	Zone II Floor Drain	34-670	Plugged / Note 7

**Table B 3.6.4.2-2**  
**Secondary Containment Ventilation System**  
**Passive Isolation Valves or Devices**  
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**Note 1:** The two blind flanges on the SDHR penetrations (blind flanges for device number X-29-2-44 and X-29-2-45) and all the closed manual valves for the SDHR system (110176, 110186, 110180, 110181, 110182, 110187, 210186, 210187, 210191, 210192, 210193) can each be considered as a separate secondary containment isolation device for the SDHR penetrations. If one or both of the blind flanges is removed and all the above identified manual valves for the SDHR system are closed, the appropriate LCO should be entered for one inoperable SCIV in a penetration flow path with two SCIVs. With the blind flange removed, the manual valves could be opened intermittently under administrative controls per the Technical Specification Note. When both SDHR blind flanges are installed, opening of the manual valves for the SDHR system will be controlled to prevent cross connecting ventilation zones. When the manual valves for the SDHR system are open in this condition, the appropriate LCO should be entered for one inoperable SCIV in a penetration flow path with two SCIVs. When the SDHR system piping is connected and full of water, the piping forms the secondary containment boundary and the above listed SCIVs in Table B3.6.4.2-2 are no longer required for this system since the piping forms the barrier.

**Note 2:** Due to the multiple alignments of the RBCW temporary chiller, different devices will perform the SCIV function depending on the RBCW configuration. There are three devices/equipment that can perform the SCIV function for the RBCW temporary chiller supply penetration. The first SCIV for the RBCW temporary chiller supply penetration is the installed blind flange on penetration X-29-2-47. The second SCIV for the RBCW temporary chiller supply penetration is isolation valve 187389. The third SCIV for the temporary RBCW chiller supply penetration is closed drain valve 187390 and an installed blind flange on penetrations X-29-5-92 and/or X-29-5-96. Since there are effectively three SCIVs, any two can be used to define the SCIV for the penetration. Removal of one of the two required SCIVs requires entry into the appropriate LCO for one inoperable SCIV in a penetration flow path with two SCIVs. Opening of drain valve 187390 and operation of blank flanges X-29-5-96 and X-29-5-92 will be controlled to prevent cross connecting ventilation zones. These three SCIVs prevent air leakage into secondary containment. The isolation of the penetration per the Technical Specification requirement is to assure that one of the above SCIVs is closed so that there is no air leakage into secondary containment.

There are three devices/equipment that can perform the SCIV function for the RBCW temporary chiller return penetration. The first SCIV for the RBCW temporary chiller return penetration is the installed blind flange on penetration X-29-2-46. The second SCIV for the RBCW temporary chiller return penetration is isolation valve 187388. The third SCIV for the temporary RBCW chiller return penetration is closed drain valve 187391 and an installed blind flange on penetrations X-29-5-91 and/or X-29-5-95. Since there are effectively three SCIVs, any two can be used to define the SCIV for the penetration. Removal of one of the two required SCIVs requires entry into the appropriate LCO for one inoperable SCIV in a penetration flow path with two SCIVs. Opening of drain valve 187391 and operation of blank flanges X-29-5-91 and X-29-5-95 will be controlled to prevent cross connecting ventilation zones. These three SCIVs prevent air leakage into secondary containment. The isolation of the penetration per the Technical Specification requirement is to assure that one of the above SCIVs is closed so that there is no air leakage into secondary containment.

When the RBCW temporary chiller piping is connected and full of water, the piping inside secondary containment forms the secondary containment boundary and the above listed SCIVs in Table B3.6.4.2-2 are no longer required for this system.

**Note 3:** These penetrations connect Secondary Containment Zone I to a No-Zone. When Secondary Containment Zone I is isolated from the recirculation plenum, the above listed SCIVs in Table B3.6.4.2-2 are no longer required.

**Note 4:** These penetrations connect Secondary Containment Zone II to a No-Zone. When Secondary Containment Zone II is isolated from the recirculation plenum, the above listed SCIVs in Table B3.6.4.2-2 are no longer required.

**Note 5:** These penetrations connect the Railroad Bay to a No-Zone. When the Railroad Bay is a No-Zone, the above listed SCIVs in Table B3.6.4.2-2 are no longer required.

**Note 6:** These penetrations connect Secondary Containment Zone I to the Railroad Bay. The above listed SCIVs in Table B3.6.4.2-2 are not required if the Railroad Bay is a No-Zone and Zone I is isolated from the recirculation plenum OR if the Railroad Bay is aligned to Zone I.

**Note 7:** Due to drain header containing multiple floor drains in different ventilation zones, drain plugs were installed in all of the drain header floor drains. To provide the passive Secondary Containment boundary, only drain plugs in one ventilation zone are required to be installed.