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# SSES MANUAL

Manual Name: TSB1

Manual Title: TECHNICAL SPECIFICATION BASES UNIT 1 MANUAL

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SUSQUEHANNA STEAM ELECTRIC STATION  
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## B 3.6 CONTAINMENT SYSTEMS

### B 3.6.1.3 Primary Containment Isolation Valves (PCIVs)

#### BASES

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#### BACKGROUND

The function of the PCIVs, in combination with other accident mitigation systems, including secondary containment bypass valves that are not PCIVs, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) to within limits. Primary containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA.

The OPERABILITY requirements for PCIVs help ensure that an adequate primary containment boundary is maintained during and after an accident by minimizing potential paths to the environment. Therefore, the OPERABILITY requirements provide assurance that primary containment function assumed in the safety analyses will be maintained. For PCIVs, the primary containment isolation function is that the valve must be able to close (automatically or manually) and/or remain closed, and maintain leakage within that assumed in the DBA LOCA Dose Analysis. These isolation devices are either passive or active (automatic). Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. The OPERABILITY requirements for closed systems are discussed in Technical Requirements Manual (TRM) Bases 3.6.4. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system.

For each division of H<sub>2</sub>O<sub>2</sub> Analyzers, the lines, up to and including the first normally closed valves within the H<sub>2</sub>O<sub>2</sub> Analyzer panels, are extensions of primary containment (i.e., closed system), and are required to be leak rate tested in

(continued)

## BASES

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### BACKGROUND (continued)

accordance with the Leakage Rate Test Program. The H<sub>2</sub>O<sub>2</sub> Analyzer closed system boundary is identified in the Leakage Rate Test Program. The closed system boundary consists of those components, piping, tubing, fittings, and valves, which meet the guidance of Reference 6. The closed system provides a secondary barrier in the event of a single failure of the PCIVs, as described below. The closed system boundary between PASS and the H<sub>2</sub>O<sub>2</sub> Analyzer system ends at the process sampling solenoid operated isolation valves between the systems (SV-12361, SV-12365, SV-12366, SV-12368, and SV-12369). These solenoid operated isolation valves do not fully meet the guidance of Reference 6 for closed system boundary valves in that they are not powered from a Class 1E power source. However, based upon a risk determination, operating these valves as closed system boundary valves is not risk significant. These valves also form the end of the Seismic Category I boundary between the systems. These process sampling solenoid operated isolation valves are normally closed and are required to be leak rate tested in accordance with the Leakage Rate Test Program as part of the closed system for the H<sub>2</sub>O<sub>2</sub> Analyzer system. These valves are "closed system boundary valves" and may be opened under administrative control, as delineated in Technical Requirements Manual (TRM) Bases 3.6.4. Opening of these valves to permit testing of PASS in Modes 1, 2, and 3 is permitted in accordance with TRO 3.6.4.

Each H<sub>2</sub>O<sub>2</sub> Analyzer Sampling line penetrating primary containment has two PCIVs, located just outside primary containment. While two PCIVs are provided on each line, a single active failure of a relay in the control circuitry for these valves, could result in both valves failing to close or failing to remain closed. Furthermore, a single failure (a hot short in the common raceway to all the valves) could simultaneously affect all of the PCIVs within a H<sub>2</sub>O<sub>2</sub> Analyzer division. Therefore, the containment isolation barriers for these penetrations consist of two PCIVs and a closed system. For situations where one or both PCIVs are inoperable, the ACTIONS to be taken are similar to the ACTIONS for a single PCIV backed by a closed system.

(continued)

BASES

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BACKGROUND  
(continued)

The drywell vent and purge lines are 24 inches in diameter; the suppression chamber vent and purge lines are 18 inches in diameter. The containment purge valves are normally maintained closed in MODES 1, 2, and 3 to ensure the primary containment boundary is maintained. The outboard isolation valves have 2 inch bypass lines around them for use during normal reactor operation.

The RHR Shutdown Cooling return line containment penetrations {X-13A(B)} are provided with a normally closed gate valve {HV-151F015A(B)} and a normally open globe valve {HV-151F017A(B)} outside containment and a testable check valve {HV-151F050A(B)} with a normally closed parallel air operated globe valve {HV-151F122A(B)} inside containment. The gate valve is manually opened and automatically isolates upon a containment isolation signal from the Nuclear Steam Supply Shutoff System or RPV low level 3 when the RHR System is operated in the Shutdown Cooling Mode only. The LPCI subsystem is an operational mode of the RHR System and uses the same injection lines to the RPV as the Shutdown Cooling Mode.

The design of these containment penetrations is unique in that some valves are containment isolation valves while others perform the function of pressure isolation valves. In order to meet the 10 CFR 50 Appendix J leakage testing requirements, the HV-151F015A(B) and the closed system outside containment are the only barriers tested in accordance with the Leakage Rate Test Program. Since these containment penetrations {X-13A and X-13B} include a containment isolation valve outside containment that is tested in accordance with 10 CFR 50 Appendix J requirements and a closed system outside containment that meets the requirements of USNRC Standard Review Plan 6.2.4 (September 1975), paragraph II.3.e, the containment isolation provisions for these penetrations provide an acceptable alternative to the explicit requirements of 10 CFR 50, Appendix A, GDC 55.

Containment penetrations X-13A(B) are also high/low pressure system interfaces. In order to meet the requirements to have two (2) isolation valves between the high pressure and low pressure systems, the HV-151F050A(B), HV-151F122A(B), 151130 and HV-151F015A(B) valves are used to meet this requirement and are tested in accordance with the pressure test program.

(continued)

BASES

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APPLICABLE  
SAFETY ANALYSES

The PCIVs LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory, and establishing the primary containment boundary during major accidents. As part of the primary containment boundary, PCIV OPERABILITY supports leak tightness of primary containment. Therefore, the safety analysis of any event requiring isolation of primary containment is applicable to this LCO.

The DBAs that result in a release of radioactive material within primary containment are a LOCA and a main steam line break (MSLB). In the analysis for each of these accidents, it is assumed that PCIVs are either closed or close within the required isolation times following event initiation. This ensures that potential paths to the environment through PCIVs (including primary containment purge valves) and secondary containment bypass valves that are not PCIVs are minimized. The closure time of the main steam isolation valves (MSIVs) for a MSLB outside primary containment is a significant variable from a radiological standpoint. The MSIVs are required to close within 3 to 5 seconds since the 5 second closure time is assumed in the analysis. The safety analyses assume that the purge valves were closed at event initiation. Likewise, it is assumed that the primary containment is isolated such that release of fission products to the environment is controlled.

The DBA analysis assumes that within the required isolation time leakage is terminated, except for the maximum allowable leakage rate,  $L_a$ .

The single failure criterion required to be imposed in the conduct of unit safety analyses was considered in the original design of the primary containment purge valves. Two valves in series on each purge line provide assurance that both the supply and exhaust lines could be isolated even if a single failure occurred.

The primary containment purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain closed during MODES 1, 2, and 3 except as permitted under Note 2 of SR 3.6.1.3.1. In this case, the single failure criterion remains applicable to the primary containment purge valve

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(continued)

BASES

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APPLICABLE  
SAFETY ANALYSES  
(continued)

due to failure in the control circuit associated with each valve. The primary containment purge valve design precludes a single failure from compromising the primary containment boundary as long as the system is operated in accordance with this LCO.

Both H<sub>2</sub>O<sub>2</sub> Analyzer PCIVs may not be able to close given a single failure in the control circuitry of the valves. The single failure is caused by a "hot short" in the cables/raceway to the PCIVs that causes both PCIVs for a given penetration to remain open or to open when required to be closed. This failure is required to be considered in accordance with IEEE-279 as discussed in FSAR Section 7.3.2a. However, the single failure criterion for containment isolation of the H<sub>2</sub>O<sub>2</sub> Analyzer penetrations is satisfied by virtue of the combination of the associated PCIVs and the closed system formed by the H<sub>2</sub>O<sub>2</sub> Analyzer piping system as discussed in the BACKGROUND section above.

The closed system boundary between PASS and the H<sub>2</sub>O<sub>2</sub> Analyzer system ends at the process sampling solenoid operated isolation valves between the systems (SV-12361, SV-12365, SV-12366, SV-12368, and SV-12369). The closed system is not fully qualified to the guidance of Reference 6 in that the closed system boundary valves between the H<sub>2</sub>O<sub>2</sub> system and PASS are not powered from a Class 1E power source. However, based upon a risk determination, the use of these valves is considered to have no risk significance. This exemption to the requirement of Reference 6 for the closed system boundary is documented in License Amendment No. 195.

PCIVs satisfy Criterion 3 of the NRC Policy Statement. (Ref. 2)

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LCO

PCIVs form a part of the primary containment boundary, or in the case of SCBL valves limit leakage from the primary containment. The PCIV safety function is related to minimizing the loss of reactor coolant inventory and establishing the primary containment boundary during a DBA.

The power operated, automatic isolation valves are required to have isolation times within limits and actuate on an automatic isolation signal. The valves covered by this LCO are listed in Table B 3.6.1.3-1 and Table B 3.6.1.3-2.

(continued)

BASES

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LCO

(continued)

The normally closed PCIVs, including secondary containment bypass valves listed in Table B 3.6.1.3-2 that are not PCIVs, are considered OPERABLE when manual valves are closed or open in accordance with appropriate administrative controls, automatic valves are in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves and devices are those listed in Table B 3.6.1.3-1.

Leak rate testing of the secondary containment bypass valves listed in Table 3.6.1.3-2 is permitted in Modes 1, 2 & 3 as described in the Primary Containment Leakage Rate Testing Program.

Purge valves with resilient seals, secondary containment bypass valves, including secondary containment bypass valves listed in Table B 3.6.1.3-2 that are not PCIVs, MSIVs, and hydrostatically tested valves must meet additional leakage rate requirements. Other PCIV leakage rates are addressed by LCO 3.6.1.1, "Primary Containment," as Type B or C testing.

This LCO provides assurance that the PCIVs will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the primary containment boundary during accidents

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APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, most PCIVs are not required to be

(continued)  
Revision 1

BASES

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APPLICABILITY  
(continued)

OPERABLE and the primary containment purge valves are not required to be closed in MODES 4 and 5. Certain valves, however, are required to be OPERABLE to prevent inadvertent reactor vessel draindown. These valves are those whose associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." (This does not include the valves that isolate the associated instrumentation.)

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ACTIONS

The ACTIONS are modified by a Note allowing penetration flow path(s) to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

A second Note has been added to provide 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 PCIV. Complying with the Required Actions may allow for continued operation, and subsequent inoperable PCIVs are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are modified by Notes 3 and 4. Note 3 ensures that appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable PCIV (e.g., an Emergency Core Cooling System subsystem is inoperable due to a failed open test return valve). Note 4 ensures appropriate remedial actions are taken when the primary containment leakage limits are exceeded. Pursuant to LCO 3.0.6, these actions are not required even when the associated LCO is not met. Therefore, Notes 3 and 4 are added to require the proper actions be taken.

A.1 and A.2

With one or more penetration flow paths with one PCIV inoperable except for purge valve leakage not within limit,

(continued)

BASES

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ACTIONS

A.1 and A.2 (continued)

the affected penetration flow paths 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, a blind flange, and a check valve with flow through the valve secured. For a penetration isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available valve to the primary containment. The Required Action must be completed within the 4 hour Completion Time (8 hours for main steam lines). The Completion Time of 4 hours is reasonable considering the time required to isolate the penetration and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. For main steam lines, an 8 hour Completion Time is allowed. The Completion Time of 8 hours for the main steam lines allows a period of time to restore the MSIVs to OPERABLE status given the fact that MSIV closure will result in isolation of the main steam line(s) and a potential for plant shutdown.

For affected penetrations that have been isolated in accordance with Required Action A.1, the affected penetration flow path(s) must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident, and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those devices outside containment and capable of potentially being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside primary containment" is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For the devices inside primary containment, the time period specified "prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility.

(continued)

BASES

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ACTIONS

A.1 and A.2 (continued)

Condition A is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two PCIVs except for the H<sub>2</sub>O<sub>2</sub> Analyzer penetrations. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions. For the H<sub>2</sub>O<sub>2</sub> Analyzer Penetrations, Condition D provides the appropriate Required Actions.

Required Action A.2 is modified by a Note that applies to isolation devices 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 devices, once they have been verified to be in the proper position, is low.

B.1

With one or more penetration flow paths with two PCIVs inoperable except for purge valve leakage not within limit, either the inoperable PCIVs must be restored to OPERABLE status or the affected penetration flow path must be isolated within 1 hour. 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. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two PCIVs except for the H<sub>2</sub>O<sub>2</sub> Analyzer penetrations. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions. For the H<sub>2</sub>O<sub>2</sub> Analyzer Penetrations, Condition D provides the appropriate Required Actions.

C.1 and C.2

With one or more penetration flow paths with one PCIV inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path

(continued)

BASES

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ACTIONS

C.1 and C.2 (continued)

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 72 hour Completion Time. The Completion Time of 72 hours is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. The closed system must meet the requirements of Reference 6. For conditions where the PCIV and the closed system are inoperable, the Required Actions of TRO 3.6.4, Condition B apply. For the Excess Flow Check Valves (EFCV), the Completion Time of 12 hours is reasonable considering the instrument and the small pipe diameter of penetration (hence, reliability) to act as a penetration isolation boundary and the small pipe diameter of the affected penetrations. 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 primary 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 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 PCIV. For penetration flow paths with two PCIVs and the H<sub>2</sub>O<sub>2</sub> Analyzer Penetration. Conditions A, B and D 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.

(continued)

BASES

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ACTIONS  
(continued)

D.1 and D.2

With one or more H<sub>2</sub>O<sub>2</sub> Analyzer penetrations with one or both PCIVs inoperable, the inoperable valve(s) 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 D.1 must be completed within the 72 hour Completion Time. The Completion Time of 72 hours is reasonable considering the unique design of the H<sub>2</sub>O<sub>2</sub> Analyzer penetrations. The containment isolation barriers for these penetrations consist of two PCIVs and a closed system. In addition, the Completion Time of 72 hours is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. In the event the affected penetration flow path is isolated in accordance with Required Action D.1, the affected penetration must be verified to be isolated on a periodic basis. This is necessary to ensure that primary 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 valves are operated under administrative controls and the probability of their misalignment is low.

When an H<sub>2</sub>O<sub>2</sub> Analyzer penetration PCIV is to be closed and deactivated in accordance with Condition D, this must be accomplished by pulling the fuse for the power supply, and either determining the power cables at the solenoid valve, or jumpering of the power side of the solenoid to ground.

The OPERABILITY requirements for the closed system are discussed in Technical Requirements Manual (TRM) Bases 3.6.4. In the event that either one or both of the PCIVs and the closed system are inoperable, the Required Actions of TRO 3.6.4, Condition B apply.

(continued)

BASES

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ACTIONS

D.1 and D.2 (continued)

Condition D is modified by a Note indicating that this Condition is only applicable to the H<sub>2</sub>O<sub>2</sub> Analyzer penetrations.

E.1

With the secondary containment bypass leakage rate not within limit, the assumptions of the safety analysis may not be met. Therefore, the leakage must be restored to within limit within 4 hours. Restoration can be accomplished by isolating the penetration that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated, the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time is reasonable considering the time required to restore the leakage by isolating the penetration and the relative importance of secondary containment bypass leakage to the overall containment function.

F.1

In the event one or more containment purge valves are not within the purge valve leakage limits, purge valve leakage must be restored to within limits. The 24 hour Completion Time is reasonable, considering that one containment purge valve remains closed, except as controlled by SR 3.6.1.3.1 so that a gross breach of containment does not exist.

G.1 and G.2

If any Required Action and associated Completion Time cannot be met in MODE 1, 2, or 3, 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.

(continued)

BASES

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ACTIONS  
(continued)

H.1 and H.2

If any Required Action and associated Completion Time cannot be met, the unit must be placed in a condition in which the LCO does not apply. If applicable, action must be immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended or valve(s) are restored to OPERABLE status. If suspending an OPDRV would result in closing the residual heat removal (RHR) shutdown cooling isolation valves, an alternative Required Action is provided to immediately initiate action to restore the valve(s) to OPERABLE status. This allows RHR to remain in service while actions are being taken to restore the valve.

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SURVEILLANCE  
REQUIREMENTS

SR 3.6.1.3.1

This SR ensures that the primary containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is also modified by Note 1, stating that primary containment purge valves are only required to be closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves, or the release of radioactive material will exceed limits prior to the purge valves closing. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are allowed to be open. The SR is modified by Note 2 stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. The vent and purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for

(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.6.1.3.1 (continued)

limited periods of time. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.2

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and 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 the primary containment boundary is within design limits.

This SR does not require any testing or valve manipulation. Rather, it involves verification that those PCIVs outside primary containment, and capable of being mispositioned, are in the correct position. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas 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 PCIVs, once they have been verified to be in the proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

SR 3.6.1.3.3

This SR verifies that each primary containment manual isolation valve and blind flange that is located inside primary containment and not locked, sealed, or otherwise

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BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.6.1.3.3 (continued)

secured and 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 the primary containment boundary is within design limits. For PCIVs inside primary containment, the Frequency defined as "prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is appropriate since these PCIVs are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing. Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since the primary containment is inerted and access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in their proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open.

SR 3.6.1.3.4

The traversing incore probe (TIP) shear isolation valves are actuated by explosive charges. Surveillance of explosive charge continuity provides assurance that TIP valves will actuate when required. Other administrative controls, such as those that limit the shelf life of the explosive charges, must be followed. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.5

Verifying the isolation time of each power operated and each automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV

(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.6.1.3.5 (continued)

full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the Final Safety Analyses Report. The isolation time and Frequency of this SR are in accordance with the requirements of the Inservice Testing Program.

SR 3.6.1.3.6

For primary containment purge valves with resilient seals, the Appendix J Leakage Rate Test Interval of 24 months is sufficient. The acceptance criteria for these valves is defined in the Primary Containment Leakage Rate Testing Program, 5.5.12.

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

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

SR 3.6.1.3.7

Verifying that the isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. This ensures that the calculated radiological consequences of these events remain within regulatory limits. The Frequency of this SR is in accordance with the requirements of the Inservice Testing Program.

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.6.1.3.8

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.1.5 overlaps this SR to provide complete testing of the safety function. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.9

This SR requires a demonstration that a representative sample of reactor instrumentation line excess flow check valves (EFCV) are OPERABLE by verifying that the valve actuates to check flow on a simulated instrument line break. As defined in FSAR Section 6.2.4.3.5 (Reference 4), the conditions under which an EFCV will isolate, simulated instrument line break, are at flow rates, which develop a differential pressure of between 3 psid and 10 psid. This SR provides assurance that the instrumentation line EFCVs will perform its design function to check flow. No specific valve leakage limits are specified because no specific leakage limits are defined in the FSAR. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The representative sample consists of an approximate equal number of EFCVs such that each EFCV is tested at least once every 10 years (nominal). The nominal 10 year interval is based on other performance-based testing programs, such as Inservice Testing (snubbers) and Option B to 10 CFR 50, Appendix J. In addition, the EFCVs in the sample are representative of the various plant configurations, models, sizes and operating environments. This ensures that any potential common problems with a specific type or application of EFCV is detected at the earliest possible time. EFCV failures will be evaluated to determine if additional testing in that test interval is warranted to ensure overall reliability and that failures to isolate are very infrequent. Therefore, testing of a representative sample was concluded to be acceptable from a reliability standpoint (Reference 7).

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(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.6.1.3.10

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.11

This SR ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions in the radiological evaluations of Reference 4 are met. The secondary containment leakage pathways and Frequency are defined by the Primary Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. A note is added to this SR, which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other MODES, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required.

SR 3.6.1.3.12

The analyses in References 1 and 4 are based on the specified leakage rate. Leakage through each MSIV must be  $\leq 100$  scfh for any one MSIV and  $\leq 300$  scfh for total leakage through the MSIVs combined with the Main Steam Line Drain Isolation Valve, HPCI Steam Supply Isolation Valve and the RCIC Steam Supply Isolation Valve. The MSIVs can be tested at either  $\geq P_t$  (24.3 psig) or  $P_a$  (48.6 psig). Main Steam Line Drain Isolation, HPCI and RCIC Steam Supply Line Isolation Valves, are tested at  $P_a$  (48.6 psig). A note is added to this SR, which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

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BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.6.1.3.13

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of Reference 2 are met. The acceptance criteria for the combined leakage of all hydrostatically tested lines is 3.3 gpm when tested at 1.1 P<sub>a</sub>, (53.46 psig). The combined leakage rates must be demonstrated in accordance with the leakage rate test Frequency required by the Primary Containment Leakage Testing Program.

As noted in Table B 3.6.1.3-1, PCIVs associated with this SR are not Type C tested. Containment bypass leakage is prevented since the line terminates below the minimum water level in the Suppression Chamber. These valves are tested in accordance with the IST Program. Therefore, these valves leakage is not included as containment leakage.

This SR has been modified by a Note that states that these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3, since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.

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REFERENCES

1. FSAR, Chapter 15.
  2. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).
  3. 10 CFR 50, Appendix J, Option B.
  4. FSAR, Section 6.2.
  5. NEDO-30851-P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System," March 1988.
  6. Standard Review Plan 6.2.4, Rev. 1, September 1975
  7. NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation," June 2000.
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Table B 3.6.1.3-1 Primary Containment Isolation Valve (Page 1 of 11)				
Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Containment Atmospheric Control	1-57-193 (d)	ILRT	Manual	N/A
	1-57-194 (d)	ILRT	Manual	N/A
	HV-15703	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15704	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15705	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15711	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15713	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15714	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15721	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15722	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15723	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15724	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15725	Containment Purge	Automatic Valve	2.b, 2.d, 2.e (15)
	HV-15766 (a)	Suppression Pool Cleanup	Automatic Valve	2.b, 2.d (30)
	HV-15768 (a)	Suppression Pool Cleanup	Automatic Valve	2.b, 2.d (30)
	HV-157113 (d)	Hardened Containment Vent	Power Operated (Air)	N/A
	HV-157114 (d)	Hardened Containment Vent	Power Operated (Air)	N/A
	SV-157100 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157100 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157101 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157101 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157102 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157102 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157103 A	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157103 B	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157104	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157105	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157106	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-157107	Containment Radiation Detection Syst	Automatic Valve	2.b, 2.d
	SV-15734 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
SV-15734 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d	
SV-15736 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d	
SV-15736 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d	
	SV-15737	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e

Table B 3.6.1.3-1  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Containment Atmospheric	SV-15738	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e
	SV-15740 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
Control (continued)	SV-15740 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15742 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15742 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15750 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15750 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15752 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15752 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15767	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e
	SV-15774 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15774 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15776 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15776 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15780 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15780 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15782 A (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15782 B (e)	Containment Atmosphere Sample	Automatic Valve	2.b, 2.d
	SV-15789	Nitrogen Makeup	Automatic Valve	2.b, 2.d, 2.e
Containment Instrument Gas	1-26-072 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-074 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-152 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-154 (d)	Containment Instrument Gas	Manual Check	N/A
	1-26-164 (d)	Containment Instrument Gas	Manual Check	N/A
	HV-12603	Containment Instrument Gas	Automatic Valve	2.c, 2.d (20)
	SV-12605	Containment Instrument Gas	Automatic Valve	2.c, 2.d
	SV-12651	Containment Instrument Gas	Automatic Valve	2.c, 2.d
	SV-12654 A	Containment Instrument Gas	Power Operated	N/A
	SV-12654 B	Containment Instrument Gas	Power Operated	N/A
	SV-12661	Containment Instrument Gas	Automatic Valve	2.b, 2.d
SV-12671	Containment Instrument Gas	Automatic Valve	2.b, 2.d	
Core Spray	HV-152F001 A (b)(c)	CS Suction Valve	Power Operated	N/A
	HV-152F001 B (b)(c)	CS Suction Valve	Power Operated	N/A
	HV-152F005 A	CS Injection	Power Operated	N/A
	HV-152F005 B	CS Injection Valve	Power Operated	N/A
	HV-152F006 A	CS Injection Valve	Air Operated Check Valve	N/A
	HV-152F006 B	CS Injection Valve	Air Operated Check Valve	N/A
	HV-152F015 A (b)(c)	CS Test Valve	Automatic Valve	2.c, 2.d (80)
	HV-152F015 B (b)(c)	CS Test Valve	Automatic Valve	2.c, 2.d (80)

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Core Spray (continued)	HV-152F031 A (b)(c)	CS Minimum Recirculation Flow	Power Operated	N/A
	HV-152F031 B (b)(c)	CS Minimum Recirculation Flow	Power Operated	N/A
	HV-152F037 A	CS Injection	Power Operated (Air)	N/A
	HV-152F037 B	CS Injection	Power Operated (Air)	N/A
	XV-152F018 A	Core Spray	Excess Flow Check Valve	N/A
	XV-152F018 B	Core Spray	Excess Flow Check Valve	N/A
HPCI	1-55-038 (d)	HPCI Injection Valve	Manual	N/A
	155F046 (b)(c)(d)	HPCI Minimum Flow Check Valve	Manual Check	N/A
	155F049 (a)(d)	HPCI Turbine Exhaust Valve	Manual Check	N/A
	HV-155F002	HPCI Steam Supply Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (50)
	HV-155F003	HPCI Steam Supply Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (50)
	HV-155F006	HPCI Injection Valve	Power Operated	N/A
	HV-155F012 (b)(c)	HPCI Minimum Flow Valve	Power Operated	N/A
	HV-155F042 (b)(c)	HPCI Suction Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (115)
	HV-155F066 (a)	HPCI Turbine Exhaust Valve	Power Operated	N/A
	HV-155F075	HPCI Vacuum Breaker Isolation Valve	Automatic Valve	3.b, 3.d (15)
	HV-155F079	HPCI Vacuum Breaker Isolation Valve	Automatic Valve	3.b, 3.d (15)
	HV-155F100	HPCI Steam Supply Valve	Automatic Valve	3.a, 3.b, 3.c, 3.e, 3.f, 3.g (6)
	XV-155F024 A	HPCI Valve	Excess Flow Check Valve	N/A
	XV-155F024 B	HPCI Valve	Excess Flow Check Valve	N/A
	XV-155F024 C	HPCI Valve	Excess Flow Check Valve	N/A
XV-155F024 D	HPCI Valve	Excess Flow Check Valve	N/A	
Liquid Radwaste Collection	HV-16108 A1	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
	HV-16108 A2	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
	HV-16116 A1	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
	HV-16116 A2	Liquid Radwaste Isolation Valve	Automatic Valve	2.b, 2.d (15)
Demin Water	1-41-017 (d)	Demineralized Water	Manual	N/A
	1-41-018 (d)	Demineralized Water	Manual	N/A
Nuclear Boiler	141F010 A (d)	Feedwater Isolation Valve	Manual Check	N/A
	141F010 B (d)	Feedwater Isolation Valve	Manual Check	N/A

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Nuclear Boiler (continued)	141F039 A (d)	Feedwater Isolation Valve	Manual Check	N/A
	141F039 B (d)	Feedwater Isolation Valve	Manual Check	N/A
	141818 A (d)	Feedwater Isolation Valve	Manual Check	N/A
	141818 B (d)	Feedwater Isolation Valve	Manual Check	N/A
	HV-141F016	MSL Drain Isolation Valve	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (10)
	HV-141F019	MSL Drain Isolation Valve	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (15)
	HV-141F022 A	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F022 B	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F022 C	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F022 D	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 A	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 B	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 C	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F028 D	MSIV	Automatic Valve	1.a, 1.b, 1.c, 1.d, 1.e (5)
	HV-141F032 A	Feedwater Isolation Valve	Power Operated Check	N/A
	HV-141F032 B	Feedwater Isolation Valve	Power Operated Check	N/A
	XV-141F009	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F070 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F071 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Nuclear Boiler (continued)	XV-141F072 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F072 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F072 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F072 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 A	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 B	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 C	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
	XV-141F073 D	Nuclear Boiler EFCV	Excess Flow Check Valve	N/A
Nuclear Boiler Vessel Instrumentation	XV-14201	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-14202	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F041	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F043 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F043 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F045 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F045 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F047 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F047 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 C	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F051 D	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F053 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F053 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Nuclear Boiler Vessel Instrumentation (continued)	XV-142F053 C	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F053 D	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F055	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F057	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 A	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 B	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 C	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 D	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 E	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 F	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 G	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 H	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 L	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 M	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 N	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 P	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 R	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 S	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 T	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
	XV-142F059 U	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A
XV-142F061	Nuclear Boiler Vessel Instrument	Excess Flow Check Valve	N/A	
RBCCW	HV-11313	RBCCW	Automatic Valve	2.c, 2.d (30)
	HV-11314	RBCCW	Automatic Valve	2.c, 2.d (30)
	HV-11345	RBCCW	Automatic Valve	2.c, 2.d (30)
	HV-11346	RBCCW	Automatic Valve	2.c, 2.d (30)

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
RCIC	1-49-020 (d)	RCIC INJECTION	Manual	N/A
	149F021 (b)(c)(d)	RCIC Minimum Recirculation Flow	Manual Check	N/A
	149F028 (a)(d)	RCIC Vacuum Pump Discharge	Manual Check	N/A
	149F040 (a)(d)	RCIC Turbine Exhaust	Manual Check	N/A
	FV-149F019 (b)(c)	RCIC Minimum Recirculation Flow	Power Operated	N/A
	HV-149F007	RCIC Steam Supply	Automatic Valve	4.a, 4.b, 4.c, 4.e, 4.f, 4.g (20)
	HV-149F008	RCIC Steam Supply	Automatic Valve	4.a, 4.b, 4.c, 4.e, 4.f, 4.g (20)
	HV-149F013	RCIC Injection	Power Operated	N/A
	HV-149F031 (b)(c)	RCIC Suction	Power Operated	N/A
	HV-149F059 (a)	RCIC Turbine Exhaust	Power Operated	N/A
	HV-149F060 (a)	RCIC Vacuum Pump Discharge	Power Operated	N/A
	HV-149F062	RCIC Vacuum Breaker	Automatic Valve	4.b, 4.d (10)
	HV-149F084	RCIC Vacuum Breaker	Automatic Valve	4.b, 4.d (10)
	HV-149F088	RCIC Steam Supply	Automatic Valve	4.a, 4.b, 4.c, 4.e, 4.f, 4.g (12)
	XV-149F044 A	RCIC	Excess Flow Check Valve	N/A
	XV-149F044 B	RCIC	Excess Flow Check Valve	N/A
	XV-149F044 C	RCIC	Excess Flow Check Valve	N/A
XV-149F044 D	RCIC	Excess Flow Check Valve	N/A	
RB Chilled Water System	HV-18781 A1	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18781 A2	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18781 B1	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18781 B2	RB Chilled Water	Automatic Valve	2.c, 2.d (40)
	HV-18782 A1	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18782 A2	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18782 B1	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18782 B2	RB Chilled Water	Automatic Valve	2.c, 2.d (12)
	HV-18791 A1	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18791 A2	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18791 B1	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18791 B2	RB Chilled Water	Automatic Valve	2.b, 2.d (15)
	HV-18792 A1	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
	HV-18792 A2	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
	HV-18792 B1	RB Chilled Water	Automatic Valve	2.b, 2.d (8)
HV-18792 B2	RB Chilled Water	Automatic Valve	2.b, 2.d (8)	
Reactor	143F013 A (d)	Recirculation Pump Seal Water	Manual Check	N/A
Recirculation	143F013 B (d)	Recirculation Pump Seal Water	Manual Check	N/A

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Reactor Recirculation (continued)	XV-143F003 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F003 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F004 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F004 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F009 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F010 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F011 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F012 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F017 A	Recirculation Pump Seal Water	Excess Flow Check Valve	N/A
	XV-143F017 B	Recirculation Pump Seal Water	Excess Flow Check Valve	N/A
	XV-143F040 A	Reactor Recirculation	Excess Flow Check Valve	N/A

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Reactor Recirculation (continued)	XV-143F040 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F040 C	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F040 D	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F057 A	Reactor Recirculation	Excess Flow Check Valve	N/A
	XV-143F057 B	Reactor Recirculation	Excess Flow Check Valve	N/A
	HV-143F019	Reactor Coolant Sample	Automatic Valve	2.b (9)
	HV-143F020	Reactor Coolant Sample	Automatic Valve	2.b (2)
Residual Heat Removal	HV-151F004 A (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F004 B (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F004 C (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F004 D (b)(c)	RHR - Suppression Pool Suction	Power Operated	N/A
	HV-151F007 A (b)(c)	RHR-Minimum Recirculation Flow	Power Operated	N/A
	HV-151F007 B (b)(c)	RHR-Minimum Recirculation Flow	Power Operated	N/A
	HV-151F008	RHR - Shutdown Cooling Suction	Automatic Valve	6.a, 6.b, 6.c (52)
	HV-151F009	RHR - Shutdown Cooling Suction	Automatic Valve	6.a, 6.b, 6.c (52)
	HV-151F011 A (b)(d)	RHR-Suppression Pool Cooling/Spray	Manual	N/A
	HV-151F011 B (b)(d)	RHR-Suppression Pool Cooling/Spray	Manual	N/A
	HV-151F015 A (f)	RHR - Shutdown Cooling Return/LPCI Injection	Power Operated	N/A
	HV-151F015 B (f)	RHR - Shutdown Cooling Return/LPCI Injection	Power Operated	N/A
	HV-151F016 A (b)	RHR - Drywell Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F016 B (b)	RHR - Drywell Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F022	RHR - Reactor Vessel Head Spray	Automatic Valve	2.d, 6.a, 6.b, 6.c (30)
	HV-151F023	RHR - Reactor Vessel Head Spray	Automatic Valve	2.d, 6.a, 6.b, 6.c (20)
	HV-151F028 A (b)	RHR - Suppression Pool Cooling/Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F028 B (b)	RHR - Suppression Pool Cooling/Spray	Automatic Valve	2.c, 2.d (90)
	HV-151F050 A (g)	RHR - Shutdown Cooling Return/LPCI Injection Valve	Air Operated Check Valve	N/A
	HV-151F050 B (g)	RHR - Shutdown Cooling Return/LPCI Injection Valve	Air Operated Check Valve	N/A
	HV-151F103 A (b)	RHR Heat Exchanger Vent	Power Operated	N/A
	HV-151F103 B (b)	RHR Heat Exchanger Vent	Power Operated	N/A

Table B 3.6.1.3-1 (continued)  
Primary Containment Isolation Valve  
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Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Residual Heat Removal (continued)	HV-151F122 A (g)	RHR - Shutdown Cooling Return/LPCI Injection Valve	Power Operated (Air)	N/A
	HV-151F122 B (g)	RHR - Shutdown Cooling Return/LPCI Injection Valve	Power Operated (Air)	N/A
	PSV-15106 A (b)(d)	RHR - Relief Valve Discharge	Relief Valve	N/A
	PSV-15106 B (b)(d)	RHR - Relief Valve Discharge	Relief Valve	N/A
	PSV-151F126 (d)	RHR - Shutdown Cooling Suction	Relief Valve	N/A
	XV-15109 A	RHR	Excess Flow Check Valve	N/A
	XV-15109 B	RHR	Excess Flow Check Valve	N/A
	XV-15109 C	RHR	Excess Flow Check Valve	N/A
XV-15109 D	RHR	Excess Flow Check Valve	N/A	
RWCU	HV-144F001 (a)	RWCU Suction	Automatic Valve	5.a, 5.b, 5.c, 5.d, 5.f, 5.g (30)
	HV-144F004 (a)	RWCU Suction	Automatic Valve	5.a, 5.b, 5.c, 5.d, 5.e, 5.f, 5.g (30)
	XV-14411 A	RWCU	Excess Flow Check Valve	N/A
	XV-14411 B	RWCU	Excess Flow Check Valve	N/A
	XV-14411 C	RWCU	Excess Flow Check Valve	N/A
	XV-14411 D	RWCU	Excess Flow Check Valve	N/A
	XV-144F046	RWCU	Excess Flow Check Valve	N/A
	HV-14182 A	RWCU Return Isolation Valve	Power Operated	N/A
	HV-14182 B	RWCU Return Isolation Valve	Power Operated	N/A
SLCS	148F007 (a)(d)	SLCS	Manual Check	N/A
	HV-148F006 (a)	SLCS	Power Operated Check Valve	N/A
TIP System	C51-J004 A (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 B (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 C (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 D (Shear Valve)	TIP Shear Valves	Squib Valves	N/A
	C51-J004 E (Shear Valve)	TIP Shear Valves	Squib Valves	N/A

**Table B 3.6.1.3-1  
Primary Containment Isolation Valve  
(Page 11 of 11)**

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
TIP System (continued)	C51-J004 A (Ball Valve)	TIP Ball Valves	Automatic Valve	7.a, 7.b (5)
	C51-J004 B (Ball Valve)	TIP Ball Valves	Automatic Valve	7.a, 7.b (5)
	C51-J004 C (Ball Valve)	TIP Ball Valves	Automatic Valve	7.a, 7.b (5)
	C51-J004 D (Ball Valve)	TIP Ball Valves	Automatic Valve	7.a, 7.b (5)
	C51-J004 E (Ball Valve)	TIP Ball Valves	Automatic Valve	7.a, 7.b (5)

- (a) Isolation barrier remains water filled or a water seal remains in the line post-LOCA, isolation valve is tested with water. Isolation valve leakage is not included in 0.60 L<sub>a</sub> total Type B and C tests.
- (b) Redundant isolation boundary for this valve is provided by the closed system whose integrity is verified by the Leakage Rate Test Program. This footnote does not apply to valve 155F046 (HPCI) when the associated PCIV, HV155F012 is closed and deactivated. Similarly, this footnote does not apply to valve 149F021 (RCIC) when it's associated PCIV, FV149F019 is closed and deactivated.
- (c) Containment Isolation Valves are not Type C tested. Containment bypass leakage is prevented since the line terminates below the minimum water level in the Suppression Chamber. Refer to the IST Program.
- (d) LCO 3.3.3.1, "PAM Instrumentation," Table 3.3.3.1-1, Function 6, does not apply since these are relief valves, check valves, manual valves or deactivated and closed.
- (e) The containment isolation barriers for the penetration associated with this valve consists of two PCIVs and a closed system. The closed system provides a redundant isolation boundary for both PCIVs, and its integrity is required to be verified by the Leakage Rate Test Program.
- (f) Redundant isolation boundary for this valve is provided by the closed system whose integrity is verified by the Leakage Rate Test Program.
- (g) These valves are not required to be 10 CFR 50, Appendix J tested since the HV-151F015A(B) valves and a closed system form the 10 CFR 50, Appendix J boundary. These valves form a high/low pressure interface and are pressure tested in accordance with the pressure test program.

Table B 3.6.1.3-2  
 Secondary Containment Bypass Leakage Isolation Valves  
 (Not PCIVs)  
 (Page 1 of 1)

Plant System	Valve Number	Valve Description	Type of Valve	Isolation Signal LCO 3.3.6.1 Function No. (Maximum Isolation Time (Seconds))
Residual Heat Removal	HV-151F040	RHR - RADWASTE LINE IB ISO VLV	Automatic Valve	2.a, 2.d (45)
	HV-151F049	RHR - RADWASTE LINE OB ISO VLV	Automatic Valve	2.a, 2.d (20)
	1-51-136	RHR - COND TRANSFER OB SCBL CHECK VALVE	Check Valve	N/A
	1-51-137	RHR - COND TRANSFER IB SCBL CHECK VALVE	Check Valve	N/A

## 3.6 CONTAINMENT SYSTEMS

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

#### BASES

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**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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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

(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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(continued)

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            SR 3.6.4.2.1  
REQUIREMENTS

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.

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

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 to verify that the isolation time is within limits to demonstrate OPERABILITY. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. 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 Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

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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)

Reactor Building Zone	Valve Number	Valve Description	Type of Valve	Maximum Isolation Time (Seconds)
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 4)

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-27-6-92	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

**Table B 3.6.4.2-2**  
**Secondary Containment Ventilation System**  
**Passive Isolation Valves or Devices**  
(Page 2 of 4)

Device Number	Device Description	Area/Elev.	Required Position / Notes
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
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
1LRWI810U	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810V	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810W	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810X	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810Y	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810Z	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810FF	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810GG	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810HH	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810JJ	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI810KK	Zone III Floor Drain	29-818	Plugged / Note 7
1LRWI615A	Zone I, Zone III, or No Zone Floor Drain	29-779	Plugged / Note 7
1LRWI100A	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7
1LRWI100B	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7
1LRWI100C	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7
1LRWI100D	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7
1LRWI100E	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7
1LRWI100F	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7
1LRWI100G	Zone I, Zone III, or No Zone Floor Drain	29-670	Plugged / Note 7

**Table B 3.6.4.2-2**  
**Secondary Containment Ventilation System**  
**Passive Isolation Valves or Devices**  
 (Page 3 of 4)

Device Number	Device Description	Area/Elev.	Required Position / Notes
2LRW810L	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW810M	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW810N	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW810R	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW810S	Zone III Floor Drain	34-818	Plugged / Note 7
2LRW703A	Zone II Floor Drain	34-799	Plugged / Note 7
2LRW615A	Zone II Floor Drain	34-779	Plugged / Note 7
2LRW100A	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW100B	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW100C	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW100D	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW100E	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW100F	Zone II Floor Drain	34-670	Plugged / Note 7
2LRW100G	Zone II Floor Drain	34-670	Plugged / Note 7
257328 OR 257336	HCVS Rupture Disc Burst Connection Isolation Valves	21/686'	Closed Manual Iso Valve / Note 4
157328 OR 157336	HCVS Rupture Disc Burst Connection Isolation Valves	21/686'	Closed Manual Iso Valve / Note 3

**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 X-29-5-96. Since there are effectively three SCIVs, any two can be used to satisfy the SCIV requirements 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. 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.

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 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. 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.

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 a 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.