LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS BASES

BASES

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TABLE NOTATION

This table notation identifies which valves, in an actuation group, are closed by a particular trip signal. If all valves in the group are closed by the trip signal, only the valve group number will be listed. If only certain valves in the group are closed by the trip signal, the valve group number will be listed followed by, in parentheses, a listing of which valves are closed by the trip signal.

TRIP FUNCTION	VALVES CLOSED BY SIGNAL
1. PRIMARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level -	
1) Low Low, Level 2	2, 8, 9, 12, 13, 14, 15 (HV-5154, HV-5155), 17, 18
2) Low Low Low, Level 1	10, 11, 15(HV-5126 A&B, HV-5152 A&B, HV-5147, HV-5148, HV-5162), 16
b. Drywell Pressure - High	8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
c. Reactor Building Exhaust Radiation - High	8, 9, 12, 13, 14, 15, 17 (HV-5161), 18
d. Manual Initiation	8, 9, 10, 11, 12, 13, 14, 15, 16, 17 (HV-5161), 18
2. SECONDARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level - Low Low, Level 2	19
b. Drywell Pressure - High	19
c. Refueling Floor Exhaust Radiation - High	19
d. Reactor Building Exhaust Radiation - High	19
e. Manual Initiation	19

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TABLE NOTATION

TRIP FUNCTION	VALVES CLOSED BY SIGNAL
3. MAIN STEAM LINE ISOLATION	
a. Reactor Vessel Water Level - Low Low Low, Level 1	1 (HV-F022A, B, C & D, HV-F028A, B, C & D, HV-F016, HV-F019)
b. Main Steam Line Radiation - High, High	2
c. Main Steam Line Pressure - Low	1 (as above)
d. Main Steam Line Flow - High	1 (as above)
e. Condenser Vacuum - Low	1 (as above)
f. Main Steam Line Tunnel Temperature - High	1 (as above)
g. Manual Initiation	1 (as above), 2, 17 (SV-J004A-1, 2, 3, 4 & 5)
4. REACTOR WATER CLEANUP SYSTEM ISOLATION	
a. RWCU Δ Flow - High	7
b. RWCU Δ Flow - High, Timer	7
c. RWCU Area Temperature - High	7

PRIMARY CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

3.6.1.2 Primary containment leakage rates shall be limited to:

a. An overall integrated leakage rate (Type A test) in accordance with the Primary Containment Leakage Rate Testing Program.

b. A combined leakage rate in accordance with the Primary Containment Leakage Rate Testing Program for all penetrations and all valves listed in Table 3.6.3-1, except for main steam line isolation valves*, valves which form the boundary for the long-term seal of the feedwater lines, and other valves which are hydrostatically tested per Table 3.6.3-1, subject to Type B and C tests.

c. *Less than or equal to 150 scfh per main steam line and less than or equal to 250 scfh combined through all four main steam lines when tested at 5 psig (leakage rate corrected to 1 Pa, 48.1 psig).

d. A combined leakage rate of less than or equal to 10 gpm for all containment isolation valves which form the boundary for the long-term seal of the feedwater lines in Table 3.6.3-1, when tested at 1.10 Pa, 52.9 psig.

e. A combined leakage rate of less than or equal to 10 gpm for all other penetrations and containment isolation valves in hydrostatically tested lines in Table 3.6.3-1 which penetrate the primary containment, when tested at 1.10 Pa, 52.9 psig Δp.

APPLICABILITY: When PRIMARY CONTAINMENT INTEGRITY is required per Specification 3.6.1.1.

ACTION:
With:

a. The measured overall integrated primary containment leakage rate (Type A test) not in accordance with the Primary Containment Leakage Rate Testing Program, or

b. The measured combined leakage rate for all penetrations and all valves listed in Table 3.6.3-1, except for main steam line isolation valves*, valves which form the boundary for the long-term seal of the feedwater lines, and other valves which are hydrostatically tested per Table 3.6.3-1, subject to Type B and C tests not in accordance with the Primary Containment Leakage Rate Testing Program, or

c. The measured leakage rate exceeding 150 scfh per main steam line or exceeding 250 scfh combined through all four main steam lines, or

*Exemption to Appendix "J" of 10 CFR 50.

ACTION (Continued)

d. The measured combined leakage rate for all containment isolation valves which form the boundary for the long-term seal of the feedwater lines in Table 3.6.3-1 exceeding 10 gpm, or

e. The measured combined leakage rate for all other penetrations and containment isolation valves in hydrostatically tested lines in Table 3.6.3-1 which penetrate the primary containment exceeding 10 gpm,

restore:

a. The overall integrated leakage rate(s) (Type A test) to be in accordance with the Primary Containment Leakage Rate Testing Program, and

b. The combined leakage rate for all penetrations and all valves listed in Table 3.6.3-1, except for main steam line isolation valves*, valves which form the boundary for the long-term seal of the feedwater lines, and other valves which are hydrostatically tested per Table 3.6.3-1, subject to Type B and C tests to be in accordance with the Primary Containment Leakage Rate Testing Program, and

c. The leakage rate to less than or equal to 150 scfh per main steam line and less than or equal to 250 scfh combined through all four main steam lines, and

d. The combined leakage rate for all containment isolation valves which form the boundary for the long-term seal of the feedwater lines in Table 3.6.3-1 to less than or equal to 10 gpm, and

e. The combined leakage rate for all other penetrations and containment isolation valves in hydrostatically tested lines in Table 3.6.3-1 which penetrate the primary containment to less than or equal to 10 gpm,

prior to increasing reactor coolant system temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.2.a The primary containment leakage rates shall be demonstrated in accordance with the Primary Containment Leakage Rate Testing Program for the following:

1. Type A test.

2. Type B and C tests (including air locks).

b. DELETED.

c. DELETED.

* Exemption to Appendix "J" of 10 CFR 50.

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TABLE 3.6.3-1

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	PENETRATION NUMBER	MAXIMUM ISOLATION TIME (Seconds)	NOTE(S)	P&ID
A. Automatic Isolation Valves				
1. Group 1 - Main Steam system				
(a) Main Steam Isolation Valves (MSIVs)				M-41-1
Inside:				
Line A HV-F022A (AB-V028)	P1A	5	1	
Line B HV-F022B (AB-V029)	P1B	5	1	
Line C HV-F022C (AB-V030)	P1C	5	1	
Line D HV-F022D (AB-V031)	P1D	5	1	
Outside:				
Line A HV-F028A (AB-V032)	P1A	5	1	
Line B HV-F028B (AB-V033)	P1B	5	1	
Line C HV-F028C (AB-V034)	P1C	5	1	
Line D HV-F028D (AB-V035)	P1D	5	1	
(b) Main Steam Line Drain Isolation				M-41-1
Inside: HV-F016 (AB-V039)	P12	30	3	
Outside:				
HV-F019 (AB-V040)	P12	30	3	

TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	PENETRATION NUMBER	MAXIMUM ISOLATION TIME (Seconds)	NOTE(S)	P&ID
2. Group 2 - Reactor Recirculation Water Sample System				
(a) Reactor Recirculation Water Sample Line Isolation Valves				M-43-1
Inside: BB-SV-4310	P17	15	3	
Outside: BB-SV-4311	P17	15	3	
3. Group 3 - Residual Heat Removal (RHR) System				
(a) RHR Suppression Pool Cooling Water & System Test Isolation Valves				M-51-1
Outside:				
Loop A: HV-F024A (BC-V124)	P212B	180	11	
HV-F010A (BC-V125)	P212B	180	11	
Outside:				
Loop B: HV-F024B (BC-V028)	P212A	180	11	
HV-F010B (BC-V027)	P212A	180	11	
(b) RHR to Suppression Chamber Spray Header Isolation Valves				M-51-1
Outside:				
Loop A: HV-F027A (BC-V112)	P214B	75	3	
Loop B: HV-F027B (BC-V015)	P214A	75	3	

TABLE 3.6.3-1

PRIMARY CONTAINMENT ISOLATION VALVES

NOTES

NOTATION

1. Main Steam Isolation Valve leakage is not added to 0.60 La allowable leakage.*

2. Containment Isolation Valves are sealed with a water seal from the HPCI and/or RCIC system to form the long-term seal boundary of the feedwater lines. The valves are tested with water at 1.10 Pa, 52.9 psig, to ensure the seal boundary will prevent by-pass leakage. Seal boundary liquid leakage will be limited to 10 gpm.

3. Containment Isolation Valve, Type C gas test at Pa, 48.1 psig. Leakage added to entire system leakage. Allowable leakage for entire system limited to 0.60La.

4. Containment Isolation Valve, Type C water test at 1.10 Pa, 52.9 psig delta P. Leakage added to entire system leakage. Allowable leakage for entire system limited to 10 gpm.

5. Containment boundary is discharge nozzle of relief valve, leakage tested during Type A test.*

6. Drywell and suppression chamber pressure and level instrument root valves and excess flow check valves, leakage tested during Type A.*

7. Explosive shear valves (SE-V021 through SE-V025) not Type C tested.*

8. Surveillances to be performed per Specification 3.6.1.8.

9. All valve I.D. numbers are preceded by a numeral 1 which represents a Unit 1 valve.

10. The reactor vessel head seal leak detection line (penetration J5C) excess flow check valve (BB-XV-3649) is not subject to OPERABILITY testing. This valve will not be exposed to primary system pressure except under the unlikely conditions of a seal failure where it could be partially pressurized to reactor pressure. Any leakage path is restricted at the source; therefore, this valve need not be OPERABILITY tested.

11. Containment Isolation Valve(s) are not Type C tested. Containment by-pass leakage is prevented since the line terminates below the minimum water level in the suppression chamber and the system is a closed system outside Primary Containment. Refer to Specification 4.0.5.

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*Exemption to Appendix J of 10 CFR Part 50.

rate, solution concentration or boron equivalent to meet the ATWS Rule must not invalidate the original system design basis. Paragraph (c)(4) of 10 CFR 50.62 states that:

> "Each boiling water reactor must have a Standby Liquid Control System (SLCS) with a minimum flow capacity and boron control equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution (natural boron enrichment)."

The described minimum system parameters (82.4 gpm, 13.6 percent concentration and natural boron equivalent) will ensure an equivalent injection capability that exceeds the ATWS Rule requirement. The stated minimum allowable pumping rate of 82.4 gallons per minute is met through the simultaneous operation of both pumps.

The standby liquid control system will also provide the capability to raise and maintain the long-term post-accident coolant inventory pH levels to 7 or above. This will prevent significant fractions of the dissolved iodine from being converted to elemental iodine and then re-evolving to the containment atmosphere.

1. CENPD-284-P-A, "Control Rod Drop Accident Analysis Methodology for Boling Water Reactors: Summary and Qualification," July, 1996.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 PRIMARY CONTAINMENT INTEGRITY

PRIMARY CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR Part 100 during accident conditions.

In high radiation areas and in areas posted as neutron exposure areas and controlled in a manner similar to high radiation areas, use of administrative means to verify position of valves and blind flanges is acceptable for Surveillance Requirement 4.6.1.1.b since access to these areas is typically restricted in accordance with the requirements of Technical Specification 6.12 and/or plant procedures. In addition, field verification for these components is performed before restarting from each refueling outage. Therefore, the probability of misalignment of these components, once they have been verified to be in the proper position, is low.

3/4.6.1.2 PRIMARY CONTAINMENT LEAKAGE

The limitations on primary containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the design basis LOCA maximum peak containment accident pressure of 48.1 psig, P_a. As an added conservatism, the measured overall integrated leakage rate (Type A test) is further limited to less than or equal to 0.75 L_a during performance of the periodic tests to account for possible degradation of the containment leakage barriers between leakage tests.

Operating experience with the main steam line isolation valves has indicated that degradation has occasionally occurred in the leak tightness of the valves; therefore the special requirement for testing these valves. If the leakage rate on a main steam line exceeds the requirements of Technical Specification 3.6.1.2.c (150 scfh), the leakage rate for that line will be restored to less than or equal to 25 scfh (when tested at 5 psig and corrected to Pa) prior to plant restart.

The surveillance testing for measuring leakage rates is consistent with the Primary containment Leakage Rate Testing Program.

3/4.6.1.3 PRIMARY CONTAINMENT AIR LOCKS

The limitations on closure and leak rate for the primary containment air locks are required to meet the restrictions on PRIMARY CONTAINMENT INTEGRITY and the Primary Containment Leakage Rate Testing Program. Only one closed door in each air lock is required to maintain the integrity of the containment.

3/4.6.1.4 (Deleted)

3/4.6.1.5 PRIMARY CONTAINMENT STRUCTURAL INTEGRITY

This limitation ensures that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the unit. Structural integrity is required to ensure that the containment will withstand the maximum pressure of 48.1 psig in the event of a LOCA. A visual inspection in accordance with the Primary Containment Leakage Rate Testing Program is sufficient.

3/4.6.1.6 DRYWELL AND SUPPRESSION CHAMBER INTERNAL PRESSURE

The limitations on drywell and suppression chamber internal pressure ensure that the containment peak pressure of 48.1 psig does not exceed the design pressure of 62 psig during LOCA conditions or that the external pressure differential does not exceed the design maximum external pressure differential of 3 psid. The limit of -0.5 to +1.5 psig for initial positive containment pressure will limit the total pressure to 48.1 psig which is less than the design pressure and is consistent with the safety analysis.

3/4.6.1.7 DRYWELL AVERAGE AIR TEMPERATURE

The limitation on drywell average air temperature ensures that the containment peak air temperature does not exceed the design temperature of 340°F during LOCA conditions and is consistent with the safety analysis. The 135°F average temperature is conducive to normal and long term operation.

3/4.6.1.8 DRYWELL AND SUPPRESSION CHAMBER PURGE SYSTEM

The 500 hours/365 days limit for the operation of the purge valves and the 6" nitrogen supply valve during plant Operational Conditions 1, 2 and 3 is intended to reduce the probability of a LOCA occurrence during the above operational conditions when the applicable combination of the above valves are open.

Blow-out panels are installed in the CPCS ductwork to provide additional assurance that the FRVs will be capable of performing its safety function subsequent to a LOCA.

3/4.7.1 SERVICE WATER SYSTEMS

The OPERABILITY of the station service water and the safety auxiliaries cooling systems ensures that sufficient cooling capacity is available for continued operation of the SACS and its associated safety-related equipment during normal and accident conditions. The redundant cooling capacity of these systems, assuming a single failure, is consistent with the assumptions used in the accident conditions within acceptable limits.

3/4.7.2 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

The OPERABILITY of the control room emergency filtration system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all design basis accident conditions. Continuous operation of the system with the heaters and humidity control instruments OPERABLE for 10 hours during each 31 day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less total effective dose equivalent (TEDE). This limitation is consistent with the requirements of 10 CFR Part 50.67, "Accident Source Term."

3/4.7.3 FLOOD PROTECTION

The requirement for flood protection ensures that facility flood protection features are in place in the event of flood conditions. The limit of elevation 10.5' Mean Sea Level is based on the elevation at which facility flood protection features provide protection to safety related equipment.