Attached Marked-Up
Pages of the Technical Specifications

3.6 CONTAINMENT SYSTEMS

3.6.5.1 Drywell

LCO 3.6.5.1 The drywell shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell inoperable.	A.1 Restore drywell to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.1 (3.X) ----------NOTE---------- Not required to be performed until entry into MODE 2 on the first unit startup from the sixth refueling outage. ---------- Verify bypass leakage is less than or equal to the bypass leakage limit. However, during the first unit startup following bypass leakage testing performed in accordance with this SR, the acceptance criterion is ≤ 10% of the drywell bypass leakage limit.	~~18 months~~

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24 months following 2 consecutive tests with bypass leakage greater than the bypass leakage limit until 2 consecutive tests are less than or equal to the bypass leakage limit

AND

48 months following a test with bypass leakage greater than the bypass leakage limit

AND

----------NOTE----------
SR 3.0.2 is not applicable for extensions > 12 months.
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120 months

INSERT 3.6-54B

SR 3.6.5.1.1	Perform leakage rate test for each drywell air lock door seal by pressurizing the gap between the door seals to ≥ 3.0 psig.	Once within 72 hours after each drywell air lock door closing
SR 3.6.5.1.2	----------NOTE---------- An inoperable air lock door does not invalidate the previous successful performance of the overall drywell air lock leakage rate test. --- Perform overall drywell air lock leakage rate test at ≥ 3.0 psig.	24 months

Drywell
3.6.5.1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.5.1 (74) Visually inspect the exposed accessible interior and exterior surfaces of the drywell.	Once prior to each Type A test required by SR 3.6.1.1.1.

3.6 CONTAINMENT SYSTEMS

3.6.5.2 Drywell Air Lock

LCO 3.6.5.2 The drywell air lock shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------

1. Entry and exit is permissible to perform repairs of the affected air lock components.

2. Enter applicable Conditions and Required Actions of LCO 3.6.5.1, "Drywell," when air lock leakage results in exceeding overall drywell bypass leakage rate acceptance criteria.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Drywell air lock inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate drywell overall leakage rate per LCO 3.6.5.1, "Drywell," using current air lock test results.	Immediately
	AND		
	~~C.2~~	Verify a door is closed.	1 hour
	AND		
	C.~~3~~2	Restore air lock to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

Drywell Air Lock
3.6.5.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.~~2~~ 1.1 Perform leakage rate test for each drywell air lock door seal by pressurizing ~~Verify seal leakage rate is ≤ 2 scfh when~~ the gap between the door seals ~~is pressurized~~ to ≥ 3.0 psig.	Once within 72 hours after each drywell air lock door closing
SR 3.6.5.2.~~2~~1 ----------NOTE---------- Only required to be performed upon entry into drywell. ---------- Verify only one door in the drywell air lock can be opened at a time.	24 ~~18~~ months
SR 3.6.5.~~2.3~~ 1.2 ----------NOTES~~1.~~---------- ~~1.~~ An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. (rate) (drywell) ~~2.~~ Prior to performance of the overall air lock leakage test at ≥ 3.0 psig, the air lock shall be pressurized to 19.7 psid. ---------- (Perform) ~~Verify~~ overall drywell air lock leakage rate ~~is ≤ 2 scfh by performing an overall air lock leakage~~ test at ≥ 3.0 psig.	24 ~~18~~ months

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3.6 CONTAINMENT SYSTEMS

3.6.5.3 Drywell Isolation Valves

LCO 3.6.5.3 One drywell isolation valve in each drywell penetration flow path shall be OPERABLE, except for the drywell vent and purge penetrations in which two drywell isolation valves shall be OPERABLE.

----------NOTE----------
This LCO does not apply to OPERABILITY of Drywell Post-LOCA Vacuum Relief System valves.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------
1. Penetration flow paths, except the 10 inch, 24 inch, and 36 inch drywell vent and purge penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by drywell isolation valves.

4. Enter applicable Conditions and Required Actions of LCO 3.6.5.1, "Drywell," when drywell isolation valve leakage results in exceeding overall drywell bypass leakage rate acceptance criteria.

(continued)

No changes. Provided for continuity only.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.5.3.1	Verify each 24 inch drywell vent and purge supply isolation valve is sealed closed.	31 days
SR 3.6.5.3.2	----------NOTE---------- Not required to be met when the 36 inch and either the 10 inch or 24 inch drywell vent and purge exhaust valves are open for pressure control, ALARA or air quality considerations for personnel entry. Also not required to be met during Surveillances or special testing of the purge system that requires the valves to be open. The drywell vent and purge exhaust valves shall not be opened with a 12 inch or 36 inch primary containment purge system supply or exhaust line open. ---------- Verify each 10 inch, 24 inch, and 36 inch drywell vent and purge exhaust isolation valve is closed.	31 days

(continued)

No changes. Provided for continuity only.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.3.3	----------NOTES---------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for drywell isolation valves that are open under administrative controls. ---------- Verify each required drywell isolation manual valve and blind flange that is required to be closed during accident conditions is closed.	Prior to entering MODE 2 or 3 from MODE 4, if not performed in the previous 92 days
SR 3.6.5.3.4	Verify the isolation time of each required power operated and each required automatic drywell isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.5.3.5	Verify each required automatic drywell isolation valve actuates to the isolation position on an actual or simulated isolation signal.	18 months

Technical Specification Bases Changes

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5.1 Drywell

BASES

BACKGROUND

The drywell houses the reactor pressure vessel (RPV), the reactor coolant recirculating loops, and branch connections of the Reactor Coolant System (RCS), which have isolation valves at the primary containment boundary. The function of the drywell is to maintain a pressure boundary that channels steam from a loss of coolant accident (LOCA) to the suppression pool, where it is condensed. Air forced from the drywell is released into the primary containment through the suppression pool. The pressure suppression capability of the suppression pool assures that peak LOCA temperature and pressure in the primary containment are within design limits. The drywell also protects accessible areas of the containment from radiation originating in the reactor core and RCS.

To ensure the drywell pressure suppression capability, the drywell bypass leakage must be minimized to prevent overpressurization of the primary containment during the drywell pressurization phase of a LOCA. This requires periodic testing of the drywell bypass leakage, confirmation that the drywell air lock is leak tight, OPERABILITY of the drywell isolation valves, and confirmation that the drywell vacuum relief valves are closed.

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The isolation devices for the drywell penetrations are a part of the drywell barrier. To maintain this barrier:

a. The drywell air lock is OPERABLE except as provided in LCO 3.6.5.2, "Drywell Air Lock";

b. The drywell penetrations required to be closed during accident conditions are either:

   1. capable of being closed by an OPERABLE automatic drywell isolation valve, or

   2. closed by a manual valve, blind flange, or de-activated automatic valve secured in the closed position except as provided in LCO 3.6.5.3, "Drywell Isolation Valves";

(continued)

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The drywell air lock forms part of the drywell pressure boundary. Not maintaining air lock OPERABILITY may result in degradation of the pressure suppression capability, which is assumed to be functional in the unit safety analyses. The drywell air lock does not need to meet the requirements of 10 CFR 50, Appendix J (Ref. 2), since it is not part of the primary containment leakage boundary. However, it is prudent to specify a leakage rate requirement for the drywell air lock. A seal leakage rate limit and an air lock overall leakage rate limit have been established to assure the integrity of the seals.

No changes. Provided for continuity.

BASES

BACKGROUND (continued)

c. All drywell equipment hatches are closed;

d. The Drywell Post-LOCA Vacuum Relief System is OPERABLE except as provided in LCO 3.6.5.6, "Drywell Post-LOCA Vacuum Relief System";

e. The suppression pool is OPERABLE, except as provided in LCO 3.6.2.2, "Suppression Pool Water Level"; and

f. The drywell leakage rate is within the limits of this LCO.

This Specification is intended to ensure that the performance of the drywell in the event of a DBA meets the assumptions used in the safety analyses (Ref. 1).

APPLICABLE SAFETY ANALYSES

Analytical methods and assumptions involving the drywell are presented in Reference 1. The safety analyses assume that for a high energy line break inside the drywell, the steam is directed to the suppression pool through the horizontal vents where it is condensed. Maintaining the pressure suppression capability assures that safety analyses remain valid and that the peak LOCA temperature and pressure in the primary containment are within design limits.

The drywell satisfies Criteria 2 and 3 of the NRC Policy Statement.

LCO

Maintaining the drywell OPERABLE is required to ensure that the pressure suppression design functions assumed in the safety analyses are met. The drywell is OPERABLE if the drywell structural integrity is intact and the bypass leakage is within limits, except prior to the first startup after performing a required drywell bypass leakage test. At this time, the drywell bypass leakage must be $\leq$ 10% of the drywell bypass leakage limit.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to the 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, the drywell is not required to be OPERABLE in MODES 4 and 5.

(continued)

BASES (continued)

ACTIONS

A.1

In the event the drywell is inoperable, it must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining the drywell OPERABLE during MODES 1, 2, and 3. This time period also ensures that the probability of an accident (requiring drywell OPERABILITY) occurring during periods when the drywell is inoperable is minimal. Also, the Completion Time is the same as that applied to inoperability of the primary containment in LCO 3.6.1.1, "Primary Containment."

B.1 and B.2

If the drywell cannot be restored to OPERABLE status within the required Completion Time, 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.

SURVEILLANCE REQUIREMENTS

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SR 3.6.5.1.13

The analyses in Reference 1 are based on a maximum drywell bypass leakage. This Surveillance ensures that the actual drywell bypass leakage is less than or equal to the acceptable $A\sqrt{k}$ design value of 1.18 ft^2 assumed in the safety analysis. As left drywell bypass leakage, prior to the first startup after performing a required drywell bypass leakage test, is required to be $\leq$ 10% of the drywell bypass leakage limit. At all other times between required drywell leakage rate tests, the acceptance criteria is based on the design $A\sqrt{k}$. At the design $A\sqrt{k}$ the containment temperature and pressurization response are bounded by the assumptions of the safety analysis. One drywell air lock door is left open during each drywell bypass leakage test such that each drywell air lock door is leak tested during at least every other drywell bypass leakage test. This ensures that the leakage through the drywell air lock is

(continued)

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SR 3.6.5.1.1

This SR requires a test be performed to verify seal leakage of the drywell air lock doors at pressures ≥ 3.0 psig. A seal leakage rate limit of ≤ 2 scfh has been established to ensure the integrity of the seals. The Surveillance is only required to be performed once within 72 hours after each closing. The Frequency of 72 hours is based on operating experience.

SR 3.6.5.1.2

This SR requires a test to be performed to verify overall air lock leakage of the drywell air lock at pressures ≥ 3.0 psig. Prior to performance of this test, the air lock must be pressurized to 19.7 psid. This differential pressure is the assumed peak drywell pressure expected from the accident analysis. Since the drywell pressure rapidly returns to a steady state maximum differential pressure of 3.0 psid (due to suppression pool vent clearing), the overall air lock leakage is allowed to be measured at this pressure.

An overall air lock leakage limit of ≤ 2 scfh has been established to ensure the integrity of the seals. The 24-month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for violating the drywell boundary. Operating experience has shown these components usually pass the Surveillance. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR has been modified by a Note indicating that an inoperable air lock door does not invalidate the previous successful performance of an overall air lock leakage test. This is considered reasonable, since either air lock door is capable of providing a fission product barrier in the event of a DBA.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1.3 (continued)

properly accounted for in the measured bypass leakage and that each air lock is tested periodically. The leakage test is performed every 18 months, consistent with the difficulty of performing the test, risk of high radiation exposure, and the remote possibility that a component failure that is not identified by some other drywell or primary containment SR might occur. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. In addition, if two consecutive tests fail to meet the leakage limit, a test shall be performed at least every 9 months until two consecutive tests meet the limit, at which time the 18 month Frequency may be resumed.

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SR 3.6.5.1.4

The exposed accessible drywell interior and exterior surfaces are inspected to ensure there are no apparent physical defects that would prevent the drywell from performing its intended function. This SR ensures that drywell structural integrity is maintained. The Frequency was chosen so that the interior and exterior surfaces of the drywell can be inspected in conjunction with the inspections of the primary containment required by 10 CFR 50, Appendix J (Ref. 2). Due to the passive nature of the drywell structure, the specified Frequency is sufficient to identify component degradation that may affect drywell structural integrity.

REFERENCES

1. USAR, Chapter 6 and Chapter 15.
2. 10 CFR 50, Appendix J.

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This Surveillance is performed at least once every 10 years (120 months) on a performance based frequency. The Frequency is consistent with the difficulty of performing the test, risk of high radiation exposure, and the remote possibility that sufficient component failures will occur such that the drywell bypass leakage limit will be exceeded. If during the performance of this required Surveillance the drywell bypass leakage is greater than the leakage limit, the Surveillance Frequency is increased to at least once every 48 months. If during the performance of the subsequent consecutive Surveillance the drywell bypass leakage is less than or equal to the drywell bypass leakage limit, the 10-year Frequency may be resumed. If during the performance of the subsequent consecutive Surveillance the drywell bypass leakage is greater than the drywell bypass leakage limit, the Surveillance Frequency is increased to at least once every 24 months. The 24-month Frequency must be maintained until the drywell bypass leakage is less than or equal to the leakage limit during the performance of two consecutive Surveillances, at which time the 10-year Frequency may be resumed. For two Surveillances to be considered consecutive, the Surveillances must be performed at least 12 months apart.

Since the Frequency is performance based, the Frequency was concluded to be acceptable from a reliability standpoint.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5.2 Drywell Air Lock

BASES

BACKGROUND

The drywell air lock forms part of the drywell boundary and provides a means for personnel access during MODES 2 and 3 during low power phase of unit startup. For this purpose, one double door drywell air lock has been provided, which maintains drywell isolation during personnel entry and exit from the drywell. Under the normal unit operation, the drywell air lock is kept sealed.

The drywell air lock is designed to the same standards as the drywell boundary. Thus, the drywell air lock must withstand the pressure and temperature transients associated with the rupture of any primary system line inside the drywell and also the rapid reversal in pressure when the steam in the drywell is condensed by the Emergency Core Cooling System flow following loss of coolant accident flooding of the reactor pressure vessel (RPV). It is also designed to withstand the high temperature associated with the break of a small steam line in the drywell that does not result in rapid depressurization of the RPV.

The air lock is nominally a right circular cylinder, 9 ft 10 inches in diameter, with doors at each end that are interlocked to prevent simultaneous opening. During periods when the drywell is not required to be OPERABLE, the air lock interlock mechanism may be disabled, allowing both doors of the air lock to remain open for extended periods when frequent drywell entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA).

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The drywell air lock forms part of the drywell pressure boundary. Not maintaining air lock OPERABILITY may result in degradation of the pressure suppression capability, which is assumed to be functional in the unit safety analyses. The drywell air lock does not need to meet the requirements of 10 CFR 50, Appendix J (Ref. ~~1~~ 2), since it is not part of the primary containment leakage boundary. However, it is prudent to specify a leakage rate requirement for the drywell air lock. A seal leakage rate limit ~~of ≤ 2 scfh~~

(continued)

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BASES

BACKGROUND (continued)

and an air lock overall leakage rate limit ~~of ≤ 2 scfh, at pressure ≥ 3.0 psig,~~ have been established to assure the integrity of the seals.

APPLICABLE SAFETY ANALYSES

Analytical methods and assumptions involving the drywell are presented in Reference 2. The safety analyses assume that for a high energy line break inside the drywell, the steam is directed to the suppression pool through the horizontal vents where it is condensed. Since the drywell air lock is part of the drywell pressure boundary, its design and maintenance are essential to support drywell OPERABILITY, which assures that the safety analyses are met.

The drywell air lock satisfies Criterion 3 of the NRC Policy Statement.

LCO

The drywell air lock forms part of the drywell pressure boundary. The air lock safety function assures that steam resulting from a DBA is directed to the suppression pool. Thus, the air lock's structural integrity is essential to the successful mitigation of such an event.

The air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, ~~air lock leakage must be within limits,~~ and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of the drywell does not exist when the drywell is required to be OPERABLE.

Closure of a single door in the air lock is necessary to support drywell OPERABILITY following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for entry into and exit from the drywell.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to the primary containment. In MODES 4 and 5, the probability and consequences of these events are

(continued)

Air lock leakage is excluded from this Specification. The air lock leakage rate is part of the drywell leakage rate and is controlled as part of OPERABILITY of the drywell in LCO 3.6.5.1, "Drywell."

BASES

APPLICABILITY (continued)

reduced due to the pressure and temperature limitations in these MODES. Therefore, the drywell air lock is not required to be OPERABLE in MODES 4 and 5.

ACTIONS

The ACTIONS are modified by (a) Note 1 which allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed to repair. If the inner door is inoperable, however, then there is a short time during which the drywell boundary is not intact (during access through the outer door). The ability to open the OPERABLE door, even if it means the drywell boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the drywell during the short time in which the OPERABLE door is expected to be open. The OPERABLE door must be immediately closed after each entry and exit.

The ACTIONS are modified by a second Note, which ensures appropriate remedial actions are taken when necessary. Pursuant to LCO 3.0.6, ACTIONS are not required even if the drywell is exceeding its bypass leakage limit. Therefore, the Note is added to require ACTIONS for LCO 3.6.5.1 to be taken in this event.

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

With one drywell air lock door inoperable, the OPERABLE door must be verified closed (Required Action A.1). This ensures that a leak tight drywell barrier is maintained by the use of an OPERABLE air lock door. This action must be completed within 1 hour. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.5.1 ~~"Drywell,"~~ which requires that the drywell be restored to OPERABLE status within 1 hour.

In addition, the air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour Completion Time. The Completion Time is considered reasonable for locking the OPERABLE air lock door, considering that the OPERABLE door is being maintained closed.

(continued)

BASES

ACTIONS

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

The Required Actions are modified by two Notes. Note 1 ensures only the Required Actions and associated Completion Times of Condition C are required if both doors in the air lock are inoperable. Note 2 allows entry and exit into the drywell under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock). In addition, Note 2 allows an OPERABLE air lock door to remain unlocked, but closed, when the door is under the control of a dedicated individual stationed at the air lock.

C.1 ~~C.2~~ and C.~~2~~2

With the air lock inoperable for reasons other than those described in Condition A or B, Required Action C.1 requires action to be immediately initiated to evaluate drywell bypass leakage using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the drywell inoperable if both doors in an air lock have failed a seal test or the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), drywell remains OPERABLE, yet only 1 hour (per LCO 3.6.5.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall drywell leakage rate can still be within limits.

Required Action C.2 requires that one door in the drywell air lock must be verified to be closed. This Required Action must be completed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.5.1, which requires that the drywell be restored to OPERABLE status within 1 hour.

Additionally, the air lock must be restored to OPERABLE status within 24 hours. The 24 hour Completion Time is reasonable for restoring an inoperable air lock to OPERABLE status, considering that at least one door is maintained closed in the air lock.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

If the inoperable drywell air lock cannot be restored to OPERABLE status within the required Completion Time, 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.~~2~~.1

This SR requires a test be performed to verify seal leakage of the drywell air lock doors at pressures $\geq$ 3.0 psig. A seal leakage rate limit of $\leq$ 2 scfh has been established to ensure the integrity of the seals. The Surveillance is only required to be performed once within 72 hours after each closing. The Frequency of 72 hours is based on operating experience.

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SR 3.6.5.~~2~~.2

The air lock door interlock is designed to prevent simultaneous opening of both doors in the air lock. Since both the inner and outer doors of the air lock are designed to withstand the maximum expected post accident drywell pressure, closure of either door will support drywell OPERABILITY. Thus, the door interlock feature supports drywell OPERABILITY while the air lock is being used for personnel transit in and out of the drywell. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous inner and outer door opening will not inadvertently occur. Due to the nature of this interlock, and given that the interlock mechanism is only challenged when a drywell air lock door is opened, this test is only required to be performed once every ~~18~~ 24 months. The ~~18~~ 24 month Frequency is based on the need to perform this Surveillance under the reduced reactivity conditions that apply during a plant outage and the potential for violating the drywell boundary. Operating experience has shown these components usually pass the Surveillance ~~when performed at the 18 month Frequency, which is based on the refueling cycle.~~ Therefore, the Frequency was concluded to be acceptable from a reliability standpoint

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.2.~~2~~1 (continued)

The Surveillance is modified by a Note requiring the Surveillance to be performed only upon entry into the drywell.

SR 3.6.5.~~2.3~~1.2

This SR requires a test to be performed to verify overall air lock leakage of the drywell air lock at pressures ≥ 3.0 psig. The ~~18~~ month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for violating the drywell boundary. Operating experience has shown these components usually pass the Surveillance, ~~when performed at the 18 month Frequency, which is based on the refueling cycle.~~ Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR has been modified by ~~two Notes. The first~~ Note ~~indicates~~ that an inoperable air lock door does not invalidate the previous successful performance of an overall air lock leakage test. This is considered reasonable, since either air lock door is capable of providing a fission product barrier in the event of a DBA.

Prior to performance of this test ~~The Surveillance is modified by a second Note requiring~~ the air lock ~~to~~ be pressurized to 19.7 ~~psid prior to performance of the overall air lock leakage test. The 19.7 psid~~ This differential pressure is the assumed peak drywell pressure expected from the accident analysis. Since the drywell pressure rapidly returns to a steady state maximum differential pressure of 3.0 psid (due to suppression pool vent clearing), the leakage is allowed to be measured at this pressure.

An overall air lock leakage rate limit of ≤ 2 scfh has been established to ensure the integrity of the seals.

24-

a

indicating

must

overall air lock

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REFERENCES

1. 10 CFR 50, Appendix J.
2. USAR, Chapters 6 and 15.

No changes. Provided for continuity.

BASES

BACKGROUND (continued)

penetration contains a 24-inch (1VQ002) and a 10-inch (1VQ005) isolation valve in parallel inside the drywell and a 36-inch (1VQ003) drywell isolation valve outside the drywell in parallel with a 36-inch containment isolation valve (1VQ004B) which is connected to the containment ventilation system. The system is used to remove trace radioactive airborne products prior to personnel entry. The Drywell Vent and Purge System is seldom used in MODE 1, 2, or 3; therefore, the drywell purge isolation valves are seldom open during power operation.

The drywell vent and purge isolation valves fail closed on loss of instrument air or power. The drywell vent and purge exhaust isolation valves are fast closing valves (approximately 2 to 4 seconds). These valves are qualified to close against the differential pressure induced by a loss of coolant accident (LOCA). The drywell vent and purge supply isolation valves are required to be sealed closed in MODES 1, 2, and 3.

APPLICABLE SAFETY ANALYSES

This LCO is intended to ensure that releases from the core do not bypass the suppression pool so that the pressure suppression capability of the drywell is maintained. Therefore, as part of the drywell boundary, drywell isolation valve OPERABILITY minimizes drywell bypass leakage. Therefore, the safety analysis of any event requiring isolation of the drywell is applicable to this LCO.

The limiting DBA resulting in a release of steam, water, or radioactive material within the drywell is a LOCA. In the analysis for this accident, it is assumed that drywell isolation valves either are closed or function to close within the required isolation time following event initiation.

The drywell isolation valves and drywell vent and purge isolation valves satisfy Criterion 3 of the NRC Policy Statement.

LCO

The drywell isolation valve safety function is to form a part of the drywell boundary.

The power operated drywell isolation valves are required to have isolation times within limits. Power operated automatic drywell isolation valves are also required to

(continued)

BASES

LCO (continued)

actuate on an automatic isolation signal. Additionally, drywell vent and purge supply valves are required to be sealed closed. While drywell post-LOCA vacuum relief system valves isolate drywell penetrations, they are excluded from this Specification. Controls on their isolation function are adequately addressed in LCO 3.6.5.6, "Drywell post-LOCA Vacuum Relief System."

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The normally closed isolation valves or blind flanges are considered OPERABLE when, as applicable, manual valves are closed or opened in accordance with applicable administrative controls, automatic valves are de-activated and secured in their closed position, check valves with flow through the valve secured, or blind flanges are in place. The valves covered by this LCO are included (with their associated stroke time, if applicable, for automatic valves) in Reference 2.

For the purpose of meeting this LCO, only one drywell isolation valve or blind flange is required to be OPERABLE in each drywell penetration flow path (with the exception of drywell vent and purge valves, and Drywell Post-LOCA Vacuum Relief System valves). This single isolation is acceptable on the basis that these lines do not communicate directly with the drywell or containment atmospheres. Thus, steam bypass of the suppression pool is not possible without failure of the required isolation valve in conjunction with failures of the piping both inside the drywell and outside the drywell within the containment. Further, failure of multiple flow paths would be required to exceed the containment design limitations.

APPLICABILITY

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

ACTIONS

The ACTIONS are modified by ~~four~~ three Notes. The first Note allows penetration flow paths, except for the drywell vent and purge supply and exhaust penetration flow paths, to be unisolated intermittently under administrative controls.

(continued)

INSERT B 3.6-115A

Drywell isolation valve leakage is excluded from this Specification. the drywell isolation valve leakage rates are part of the drywell leakage rate and are controlled as part of OPERABILITY of the drywell in LCO 3.6.5.1, "Drywell."

BASES

ACTIONS (continued)

Due to the size of the drywell vent and purge line penetrations and the fact that they communicate directly with the containment atmosphere, bypassing the suppression pool, these flow paths are not allowed to be unisolated under administrative controls. These controls consist of stationing a dedicated individual, who is in continuous communication with the control room, at the controls of the valve. In this way, the penetration can be rapidly isolated when a need for drywell 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 drywell isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable drywell isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The third Note requires the OPERABILITY of affected systems to be evaluated when a drywell isolation valve is inoperable. This ensures appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable drywell isolation valve.

The fourth Note ensures appropriate remedial actions are taken when the drywell bypass 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 to be taken.

A.1 and A.2

With one or more penetration flow paths with one required drywell isolation valve inoperable, 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, a blind flange, and a check valve with flow through the valve secured. In this condition, the remaining OPERABLE drywell isolation valve is adequate to perform the isolation function for drywell vent and purge system penetrations.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

The associated system piping is adequate to perform the isolation function for other drywell penetrations. However, the overall reliability is reduced because a single failure could result in a loss of drywell isolation. The 8 hour Completion Time is acceptable, since if the drywell design bypass leakage A/√k of 1.18 ft² were exceeded, ACTIONS Note 4 will ensure appropriate conservative actions are implemented. In addition, the Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting drywell OPERABILITY during MODES 1, 2, and 3.

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For affected penetration flow paths that have been isolated in accordance with Required Action A.1, the affected penetrations must be verified to be isolated on a periodic basis. This is necessary to ensure that drywell penetrations that are required to be isolated following an accident, and are no longer capable of being automatically isolated, will be isolated should an event occur. This Required Action does not require any testing or valve manipulation; rather, it involves verification that those devices outside drywell and capable of potentially being mispositioned are in the correct position. Since these devices are inside primary containment, the time period specified as "prior to entering MODE 2 or 3 from 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 that will ensure that misalignment is an unlikely possibility. Also, this Completion Time is consistent with the Completion Time specified for PCIVs in LCO 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)."

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 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.

(continued)

INSERT B 3.6-117A

due to the low probability of the inoperable valve resulting in excessive drywell leakage and the low probability of the limiting event for drywell leakage occurring during this short time.

BASES

ACTIONS (continued)

B.1

With one or more drywell vent and purge penetration flow paths with two drywell isolation valves inoperable, 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, a blind flange, and a check valve with flow through the valve secured. The 4 hour Completion Time is acceptable since if the drywell design bypass leakage area of 1.18 ft^2 were exceeded, ACTIONS Note 4 will ensure appropriate conservative actions are implemented. The Completion Time is reasonable, considering the time required to isolate the penetration, and the probability of a DBA, which requires the drywell isolation valves to close, occurring during this short time is very low.

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Condition B is modified by a Note indicating this Condition is only applicable to drywell vent and purge penetration flow paths. For other penetration flow paths, only one drywell isolation valve is required OPERABLE and, Condition A provides the appropriate Required Actions.

C.1 and C.2

If any Required Action and associated Completion Time cannot be met, the plant must be placed in 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.3.1

Each 24-inch drywell vent and purge supply isolation valve is required to be verified sealed closed at 31 day intervals. This Surveillance applies to drywell vent and purge supply isolation valves since they are not qualified to close under accident conditions. This SR is designed to ensure that a gross breach of drywell is not caused by an inadvertent or spurious drywell vent and purge isolation

(continued)

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due to the low probability of the inoperable valves resulting in excessive drywell leakage and the low probability of the limiting event for drywell leakage occurring during this short time. In addition,