Mark-up of Affected Technical Specifications and Bases

Drywell Leak Rate Testing Requirements

Grand Gulf Nuclear Station

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.1	----------NOTE---------- Not required to be performed until entry into MODE 2 on the first plant start-up from the eight refueling outage. ---------- Verify bypass leakage is less than or equal to the bypass leakage limit. However, during the first unit startup following drywell bypass leak rate testing performed in accordance with this SR, the acceptance criterion is leakage ≤ 10% of the bypass leakage limit.	~~18 months~~ Insert 3.6-53A
SR 3.6.5.1.2	Visually inspect the exposed accessible interior and exterior surfaces of the drywell.	Once prior to performance of each Type A test required by SR 3.6.1.1.1

Insert 3.6-53B

INSERT 3.6-53A

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 extentions > 12 months.
---

120 months

INSERT 3.6-53B

SR 3.6.5.1.3	Verify drywell air lock leakage by performing an air lock barrel leakage test at ≥ 3 psid.	24 months

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

----------NOTES----------

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.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One drywell air lock door inoperable.	----------NOTES---------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls. ---------- A.1 Verify the OPERABLE door is closed. AND	1 hour (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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.2.1	----------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~~.2 (1.3)	----------NOTE---------- ~~An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.~~ ---------- Verify ~~overall~~ drywell air lock leakage ~~rate is ≤ 2 scfh~~ by performing an ~~overall~~ air lock leakage test at ≥ 1.5 psig. (3)	24 ~~18~~ months

MOVED TO LCO 3.6.5.1

3.6 CONTAINMENT SYSTEMS

3.6.5.3 Drywell Isolation Valves

LCO 3.6.5.3 Each drywell isolation valve, except for Drywell Vacuum Relief System valves, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------

1. 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.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one drywell isolation valve inoperable.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	8 hours (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

SR 3.6.5.1.1

The analyses in Reference 2 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 0.9 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 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. 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

Insert B 3.6-104A

(continued)

INSERT B 3.6-104A

This Surveillance is performed at least once every 10 years 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 rate is greater than the drywell bypass leakage limit the Surveillance Frequency is increased to every 48 months. If during the performance of the subsequent consecutive Surveillance the drywell bypass leakage rate is less than or equal to the drywell bypass leakage limit the 10 year Frequency may be resumed. If during the performance of two consecutive Surveillances 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 is maintained until during the performance of two consecutive Surveillances the drywell bypass leakage rate is less than or equal to the drywell bypass leakage limit, 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,

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1.1 (continued)

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.

SR 3.6.5.1.2

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.

Insert B 3.6-105A

REFERENCES

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

INSERT B 3.6-105A

SR 3.6.5.1.3

This SR requires a test to be performed to verify air lock leakage of the drywell air lock at pressures ≥ 3 psid. 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 and requires the SR to be performed once each refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

BACKGROUND (continued)

The drywell air lock does not need to meet the requirements of 10 CFR 50, Appendix J (Ref. 1), 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 $\leq$ 2 scfh and an air lock overall leakage rate limit of $\leq$ 2 scfh, at pressure $\geq P_a$ (11.5 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 and non-condensibles, with the exception of the allowable bypass leakage, is directed to the suppression pool through the horizontal vents where it is condensed and fission product scrubbing occurs. 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.

Insert B 3.6-107A

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.

(continued)

INSERT B 3.6-107A

Airlock 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 (continued)

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 air lock is not required to be OPERABLE in MODES 4 and 5.

ACTIONS

The ACTIONS are modified by Note 1 that 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)

drywell under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time.

C.1, C.2, and [illegible]

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.

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,

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

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

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~~ and the is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

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

moved to page B 3.6-105

SR 3.6.5.~~2.2~~ 2.3

This SR requires a test to be performed to verify ~~overall~~ air lock leakage of the drywell air lock at pressures ~~≥ 11.5 psig~~ ≥ 3 psid. 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 when performed at

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.2.3 (continued)

the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

move to page B 3.6-105

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.

REFERENCES

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

BASES

LCO (continued)

they are excluded from this Specification. Controls on their isolation function are adequately addressed in LCO 3.6.5.6, "Drywell Vacuum Relief System."

Insert B 3.6-115A

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 the applicable plant procedures.

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 valve(s) are not required to be OPERABLE in MODES 4 and 5.

ACTIONS

The ACTIONS are modified by four 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 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.

(continued)

INSERT B 3.6-115A

Drywell isolation valve leakage is also 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)

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 are taken.

A.1 and A.2

With one or more penetration flow paths with one 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. However, the overall reliability is reduced because a single failure in the OPERABLE drywell isolation valve could result in a loss of drywell isolation. The 8 hour Completion Time is acceptable, since if the drywell design bypass leakage $A\sqrt{k}$ of 0.9 ft^2 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.

Insert B 3.6-116A

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 device 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

(continued)

INSERT B 3.6-116A

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 frame.

BASES

ACTIONS

A.1 and A.2 (continued)

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.

B.1

With one or more penetration flow paths with two drywell isolation valve(s) 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 $A\sqrt{k}$ of 0.9 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 valve(s) to close, occurring during this short time is very low.

Insert B 3.6-117A

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.

(continued)

INSERT B 3.6-117A

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

Mark-up of Affected Technical Specifications and Bases

Drywell Leak Rate Testing Requirements

River Bend Station

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.3	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~~ Insert 3.6-61A
SR 3.6.5.1.4	Visually inspect the exposed accessible interior and exterior surfaces of the drywell.	Once prior to performance of each Type A test required by SR 3.6.1.1.1

space

Insert 3.6-61B

INSERT 3.6-61A

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 extentions > 12 months.
---

120 months

INSERT 3.6-61B

SR 3.6.5.1.5	Verify seal leakage rate when the gap between the door seals is pressurized to ≥ 3 psid.	Once within 72 hours after each drywell air lock door closing
SR 3.6.5.1.6	Verify drywell air lock leakage by performing an air lock barrel leakage test at ≥ 3 psid.	24 months

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.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One drywell air lock door inoperable.	----------NOTES---------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls. ---------- A.1 Verify the OPERABLE door is closed. AND	1 hour (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~~ 2
	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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
move to LCO 3.6.5.1 — — — — — Deleted	SR 3.6.5.2.1 Verify seal leakage rate ~~is ≤ 4.05 scfh~~ when the gap between the door seals is pressurized to ≥ 3.0 psid.	Once within 72 hours after each drywell air lock door closing
	SR 3.6.5.2.2 Verify drywell air lock seal air flask pressure is ≥ 75 psig.	7 days
	SR 3.6.5.2.3 ----------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
move to LCO 3.6.5.1	~~SR 3.6.5.2.4~~ ----------NOTES---------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Prior to performance of the overall test at ≥ 3.0 psid, the airlock shall be pressurized to 19.2 psid. ---------- Verify ~~overall~~ drywell air lock leakage rate ~~is ≤ 11.85 scfh~~ by performing an ~~overall~~ air lock leakage test at ≥ 3.0 psid.	24 ~~18~~ months

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.5.3 Drywell Isolation Valves

LCO 3.6.5.3 Each Drywell Isolation Valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------

1. Penetration flow paths, except for the 24 inch purge valve penetration flow path, 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.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one drywell isolation valve inoperable.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	8 hours (continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.5.1.3

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 1.0 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 ≤ 10% of the drywell bypass leakage limit. At all other times between required drywell leakage rate tests, the acceptance criteria is based on 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. 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.

Insert B 3.6-120A

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.

Insert B 3.6-120B

REFERENCES

1. USAR, Chapter 6 and Chapter 15.

INSERT B 3.6-120A

This Surveillance is performed at least once every 10 years 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 rate is greater than the drywell bypass leakage limit the Surveillance Frequency is increased to every 48 months. If during the performance of the subsequent consecutive Surveillance the drywell bypass leakage rate is less than or equal to the drywell bypass leakage limit the 10 year Frequency may be resumed. If during the performance of two consecutive Surveillances 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 is maintained until during the performance of two consecutive Surveillances the drywell bypass leakage rate is less than or equal to the drywell bypass leakage limit, 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,

INSERT B 3.6-120B

SR 3.6.5.1.5

This SR requires a test be performed to verify seal leakage of the drywell air lock doors at 3.0 psid. An administrative seal leakage rate limit has been established in plant procedures 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 3.6.5.1.6

This SR requires a test to be performed to verify air lock leakage of the drywell air lock at pressures ≥ 3 psid. Prior to the performance of this test the airlock is pressurized to ≥ 19.2 psid. 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 and requires the SR to be performed once each refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

BACKGROUND (continued)

The drywell air lock does not need to meet the requirements of 10 CFR 50, Appendix J (Ref. 1), 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 $\leq$ 4.05 scfh and an air lock overall leakage rate limit of $\leq$ 11.85 scfh, at 3.0 psid, 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.

Insert B 3.6-122A

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.

(continued)

INSERT B 3.6-122A

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 (continued)

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 air lock is not required to be OPERABLE in MODES 4 and 5.

ACTIONS

The ACTIONS are modified by Note 1 which that 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)

drywell under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time.

C.1, C.2, and C.3

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.

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.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.5.2.1

Moved to Page B 3.6-120

This SR requires a test be performed to verify seal leakage of the drywell air lock doors at 3.0 psid. A seal leakage rate limit of ≤ 4.05 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.

Deleted

SR 3.6.5.2.2

Every 7 days the drywell air lock seal air flask pressure is verified to be ≥ 75 psig to ensure that the seal system remains viable. It must be checked because it could bleed down during or following access through the air lock, which occurs regularly. The 7 day Frequency has been shown to be acceptable, based on operating experience, and is considered adequate in view of the other indications to the plant operations personnel that the seal air flask pressure is low.

SR 3.6.5.2.3

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 and preventive maintenance 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 24 months. The 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~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.2.3 (continued)

and the Frequency ~~which~~ is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

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

SR 3.6.5.2.4

Moved to page B 3.6-120

Deleted

This SR requires a test to be performed to verify overall air lock leakage of the drywell air lock at 3.0 psid. 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.

The Surveillance is modified by a Note requiring the air lock to be pressurized to 19.2 psid prior to performance of the overall air lock leakage test. The 19.2 psid 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.

SR 3.6.5.2.5

This SR ensures that the drywell air lock seal pneumatic system pressure does not decay at an unacceptable rate. The air lock seal will support drywell OPERABILITY down to a pneumatic pressure of 75 psig. Since the air lock seal air

(continued)

BASES

BACKGROUND (continued)

The drywell purge isolation valves fail closed on loss of instrument air or power. The drywell purge isolation valves are fast closing valves (approximately 4 seconds).

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 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 actuate on an automatic isolation signal. Additionally, drywell purge valves are required to be closed.

Insert B 3.6-130A

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.

(continued)

INSERT B 3.6-130A

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 (continued)

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 Notes. The first Note allows penetration flow paths, except for the 24 inch purge valve 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 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 are taken.

A.1 and A.2

With one or more penetration flow paths with one 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.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

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. However, the overall reliability is reduced because a single failure in the OPERABLE drywell isolation valve 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 1.0 ft^2 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.

Insert B 3.6-132A

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 device 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 3.6-132A

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 frame.

BASES

ACTIONS (continued)

B.1

With one or more 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 ~~AA~~ k of 1.0 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.

Insert B 3.6-133A

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 purge isolation valve is required to be verified sealed closed at 31 day intervals. This Surveillance is required since the drywell purge isolation valves 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 purge isolation valve opening. Detailed analysis of these 24 inch drywell purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to support drywell OPERABILITY. Therefore, these valves are required to be in sealed closed position during MODES 1, 2, and 3. These 24 inch drywell purge valves that are sealed closed must have motive power to the valve operator removed. This

(continued)

INSERT B 3.6-133A

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 frame.

Staff Questions Concerning the Proposed Changes

1. *Is it possible to demonstrate that loss of seals to all electrical penetrations passing through the drywell would not cause A/k to be exceeded?*

   A typical GGNS drywell electrical penetration is shown on Figure 3.8-62 of the GGNS UFSAR. To meet the objectives of leaktightness, each electrical penetration consists of a steel conduit, not larger than 6 inches in diameter, with a sealing condulet. After cable installation, the condulet chamber is filled with a sealing compound (very similar in practice to portland cement) which solidifies around the cable. The sealant is designed to last for the life of the plant and to resist the highest pressure and temperature which could be experienced in the drywell. The conduit is pre-bent and embedded into the drywell concrete wall. Any failure mechanism is more likely to cause seal degradation (with the seal material remaining in the conduit) rather than a complete loss of the seal. A loss of multiple seals or degradation of multiple seals is of low probability.

   There are thirty six 4 inch electrical penetrations and four 6 inch penetrations. The effective flow area would be around an A /$\sqrt{k}$ of 4 ft^2 considering the failure of all of the penetrations, if all of the penetrations are empty. But this is an unrealistic assumption. The electrical penetrations as a class are being used and are at least partially filled with cable. It is reasonable to assume that flow through the electrical penetrations will be greatly restricted by cabling in the penetration and the concrete like sealant. With the reasonable assumption that any failure of the sealing substance leaves the conduit about 75% blocked, the primary containment should not be expected to fail due to the failure of the electrical penetration sealant.

   As evidenced by the continuous successful drywell bypass tests at GGNS and RBS since the beginning of plant operation, the drywell electrical penetrations have been demonstrated to be very reliable in performing the drywell isolation function. This proven reliability of the electrical penetrations is consistent with the Appendix J Option B 10 year required test interval of electrical penetrations to support the containment isolation function (Type B testing).

2. *Verify that position of all drywell isolation valves is monitored in the control room. If not all, which drywell isolation valves are not monitored in the control room? If valves are not completely closed, will they indicate open?*

   The automatic isolation valves and remote manual isolation valves have position indication in the control room. Manual isolation valves and most check valves do not. Isolation valves with position indication that are not closed would either have an open position indication (indicating that the valve is full open) or a dual indication (indicating that the valve is somewhere between full closed and full open). Valve position is required to be checked by LCO 3.6.5.3. The controls over the drywell

isolation valve position are the same as the controls for similar valves in the primary containment.

See the table of GGNS penetrations potentially without valve position indication below. Also, not shown is the one ILRT penetration which is blank flanged.

	Type of Isolation	Penetration size inches dia.
CRD to Recirc. Pump A Seals	Stop checks	.75
Standby Liquid Control	3 stop checks in-line with the explosive valves	1.5
Condensate Flush Conn.	Locked Closed Manual	4
Upper Containment Pool Drain	Locked Closed Manual	3
CRD to Recirc. Pump B Seals	Stop Checks	.75
Service Air	Stop Check and Locked Closed Manual	.75
Instrument Air	Stop Check and Locked Closed Manual	.75
Cont. Leak Rate Test Inst.	Locked Closed Manual	1

Attachment 2 of the change request identifies the A /$\sqrt{k}$ of a 10 inch line (Drywell post LOCA vacuum relief subsystem A) was 0.255 ft^2. Making the conservative assumption that the A /$\sqrt{k}$ changes linearly as valve size decreases, the effective A / $\sqrt{k}$ of all of these penetrations failing full open is less than the effective A /$\sqrt{k}$ of a 10 inch line. As discussed in the submittal, failure of four 10 inch lines do not result in primary containment failure.

3. *Can on-line monitoring capability of the drywell leakage rate be provided?*

An on-line monitoring program would require some amount of drywell pressurization. Drywell pressurization during operation could cause an operating transient or a challenge to safety systems such as RPS and ECCS systems (GGNS RPS actuates at 1.23 psig drywell pressure and GGNS ECCS at 1.39 psig drywell pressure). We do not believe the test would provide a substantial safety benefit and would in effect introduce an unwarranted potential challenge to the plant.

Additionally, the present potential methods of monitoring drywell bypass leakage do not provide any real assurance of drywell leaktightness. For example:

At GGNS the drywell purge compressor surveillance results in the drywell being pressurized such that the pressure must be relieved to prevent a reactor scram. Another source of drywell pressurization during operation is the instrument air system. If the purge compressors no longer result in the same pressurization of the drywell is it due to a change in drywell leakage, a change in instrument air leakage in to the drywell, or a combination of factors? Or if the drywell pressurization transient caused by the purge compressors does not change how can you be assured that by drywell leakage and the instrument air leakage have not changed but are canceling each other out with respect to drywell pressurization?

4. *In March 1983 a drywell bypass leakage test failed at Grand Gulf on the first attempt. The failure was attributed to two electrical penetrations. Describe the circumstances that led to the failure and explain why the failure could not take place now.*

The following is the discussion of initial test failure from the surveillance test package:

"Drywell Bypass Leakage Rate Test

06-ME-1M10-R-0003

Notes of As-Found Data

The initial attempt to pressurize the drywell indicated larger than expected leakage. Subsequent walkdowns indicated two problem areas. The closing of a partially open vent valve on the vendor supplied compressor skids corrected the ability of the test to supply rated air flow. The temporary sealing of two open electrical conduits eliminated the other major leakage path. These two conduits were open as a result of ongoing construction activities and were scheduled to be closed when manpower permitted. The temporary sealing of these conduits during the course of the initial drywell pressurization does not affect the validity of the As-Found data as these conduits were spares which had been sealed prior to the start of recent construction activities which opened them. These conduits will be permanently sealed prior to the start of nuclear heatup.

The leakage path through these two open conduits does not indicate a degradation of drywell integrity as the leakage was the result of construction activities and not the result of degradation of the conduit sealing compounds.

As discussed above there was two problems with the test.

A. A test hookup problem with how the equipment was hooked up. Not really a drywell problem.

B. The problem that two electrical penetrations were open. It should be remembered that this was during the pre-operating license time frame. There is fewer activities occurring in the plant now and the maintenance controls are much stronger. That the maintenance controls are now adequate is demonstrated by the successful performance of all 8 tests in the 10 years after this event.

5. *How far could purge and vacuum relief valves be open before there would be an OPEN indication in the control room?*

The specific amount is not known. This position indication is set as close to full open/closed as possible. Also the valves were indicating closed during the last drywell bypass test and the test passed; therefore, we know the indicated position corresponds close enough for drywell bypass requirements. Regardless, these valves receive isolation signals (LCO 3.3.6.1) and are designed to isolated when required. The use and isolation capability of these valves is discussed in the Bases Background for GGNS LCO 3.6.5.3.

"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 purge isolation valves fail closed on loss of instrument air or power. The drywell purge isolation valves are fast closing valves (approximately 4 seconds). These valves are qualified to close against the differential pressure induced by a loss of coolant accident (LOCA)."

5(a) *Provide details of the calculation of the A/k values for the 10-inch vacuum relief valves and the 20-inch purge valves*

GGNS 10 inch

UFSAR 6.2.5.1.1 discusses the effective A/k of these flowpaths. The UFSAR states:

r. The design basis for the drywell vacuum relief function is to prevent backflow over the weir wall following a postulated small break LOCA. The vacuum relief system also serves to control rapid weir wall overflow following a postulated large break LOCA. Bounding calculations using conservative assumptions have shown that there would be no damage to safety- related equipment in the drywell above

the weir wall from drag and impact loads due to water backflow over the weir wall. Present drywell negative pressure analysis for rapid weir wall overflow in a large break LOCA assumes a vacuum relief capability of **A/k = 0.38 ft²**. This relief capability requires a minimum of **two 10 inch drywell vacuum relief paths out of the three installed**. Drywell vacuum relief is not required to assist in hydrogen dilution or to protect the structural integrity of the drywell following a large break LOCA.

As discussed on page Attachment 2 page 9 the specific values identified in the submittal are from the calculation to support this statement.

20 inch purge

GGNS has estimated that the A/k of a purge line is approximately .7 ft^2. Discussions with Clinton Power Station personnel indicates that they have estimated that the A/k of their 24 inch line is approximately .8 ft^2. Therefore, the bounding estimate of 1 ft^2 presented in the submittal is felt the be conservative.

5(b) *Verify that the discussion on page 9/23 and page 11/23 about the margin to containment overpressure because of open vacuum relief valves or a purge valve is based on the existing LOCA analyses reported in the UFSAR and there are no assumptions in the analyses which are different than those given in the UFSAR.*

These discussions are only talking about the margin between the primary containment design pressure of 15 psi and the pressure where the primary containment would actually be expected to fail (greater than 50 psi).

6. *How is the TS required verification of closure of the 20-inch purge valves performed? Indications in control room? Other?*

Valve closure is checked using control room position indication.

7. *What are the leakage testing and closure verification requirements for the drywell equipment hatch? What assurance is there, if no drywell bypass leakage test is performed, that the drywell equipment hatch is not leaking excessively?*

There is about the same assurance provided as is provided when drywell bypass testing is performed during an outage, since there is no requirement to perform the bypass test at the end of the outage. The assurance is provided by the verification of leak tightness of the drywell hatch is performed following installation at the end of the outage (GGNS and RBS). See the response to below for the TS requirements driving this test.

Leakage testing of these seals is discussed in the GGNS UFSAR 3.8.3.1.1. These are passive dual compression seals and there is no reason to expect degradation during a cycle.

8. *Is the drywell air lock ever opened during operation in MODES 1 or 2? If so, what controls are there to assure that there is not excessive leakage after it is reclosed?*

Yes, a Drywell entry is performed during every startup at GGNS at approximately 5% power. At high power the Drywell is considered inaccessible due to ALARA concerns. The Bases for the Drywell Air Lock LCO (3.6.5.2) in the Background section states "The drywell air lock forms part of the drywell boundary and provides a means for personnel access during MODES 2 and 3 during [sic] lower power phase of unit startup. ... Under normal unit operation, the drywell air lock is kept sealed." Following this entry the seal leakage rate is tested in accordance with SR TR3.6.5.2.1 (GGNS) or SR 3.6.5.2.1 (RBS).

9. *There do not appear to be any requirements for the leakage rate testing of the drywell after modifications to the drywell structure or penetrations. How is this addressed?*

The following is discussed in the TS Bases for SR 3.0.1:

"SR 3.0.1 establishes the requirement that SRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Surveillance within the specified Frequency, in accordance with SR 3.0.2, constitutes a failure to meet an LCO.

Systems and components are assumed to be OPERABLE when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components are OPERABLE when:

a. The systems or components are known to be inoperable, although still meeting the SRs; or

b. The requirements of the Surveillance(s) are known to be not met between required Surveillance performances."

The Bases goes on to state:

"**Upon completion of maintenance, appropriate post maintenance testing is required** to declare equipment OPERABLE. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with SR 3.0.2."

These Bases describe the SR 3.0.2 requirement that any time maintenance has been performed which could result in required Surveillances not being met that appropriate post maintenance testing must be performed.

Note: GGNS SR TR3.6.5.2.4 documents specific testing required following a specific maintenance activity. This requirement was relocated from the TS as part of the improved Technical Specification implementation.

10. *a.* *The results of a calculation showing that all vacuum breakers may be left open at RBS without exceeding the drywell bypass limit based on the analysis given in the UFSAR.*

River Bend does not have vacuum breakers. Its hydrogen mixing system has 6 inch valves.

b. *The results of a calculation at RBS showing that one purge valve may be open in addition to bypass leakage at the TS limit without exceeding the containment failure pressure.*

RBS has 24 inch purge valves; therefore, the A/k should be consistent with GGNS and Clinton Power Station and the 1 ft^2 presented in the submittal should be conservative.