

ATTACHMENT 3
Marked-up ITS Pages

Primary Containment/Drywell Hydrogen Mixing System
3.6.3.3

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|-------------------|-----------------|
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--------------------|
| SR 3.6.3.3.1 Operate each primary containment/drywell hydrogen mixing subsystem for ≥ 15 minutes. | 92 days |
| SR 3.6.3.3.2 Verify each primary containment/drywell hydrogen mixing subsystem flow rate is ≥ 600 cfm. | 18 months |

Every COLD SHUT DOWN, if not performed within the previous 92 days.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. (continued) | <p>A.2 -----NOTE----- Isolation devices in high radiation areas may be verified by use of administrative means. -----</p> <p>Verify the affected penetration flow path is isolated.</p> | Prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days |
| B. One or more penetration flow paths with two drywell isolation valves inoperable. | B.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. | 4 hours |
| <p><i>INSERT A</i> →</p> <p>D. Required Action and associated Completion Time not met.</p> | <p>D.1 C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 D.2 Be in MODE 4.</p> | <p>12 hours</p> <p>36 hours</p> |

INSERT A

| | | |
|--|---|-------------|
| C. One or more Hydrogen Mixing penetration flow paths not within the limitations specified in SR 3.6.5.3.6 | C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, blind flange, or check valve with flow through the valve secured. | Immediately |
|--|---|-------------|

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| SR 3.6.5.3.1 Verify each 24 inch drywell purge isolation valve is sealed closed. | 31 days |
| SR 3.6.5.3.2 -----NOTE----- Not required to be met when the primary containment/drywell hydrogen mixing inlet or outlet 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 on the hydrogen mixing system that require the valves to be open. ----- Verify each primary containment/drywell hydrogen mixing isolation valve is closed. | 31 days |
| 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 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 |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.6.5.3.4 Verify the isolation time of each power operated and each automatic drywell isolation valve is within limits. | In accordance with the Inservice Testing Program |
| SR 3.6.5.3.5 Verify each automatic drywell isolation valve actuates to the isolation position on an actual or simulated isolation signal. | 18 months |
| SR 3.6.5.3.6 Verify the cumulative time that the primary containment/drywell hydrogen mixing inlet or outlet penetrations are open to be ≤ 5 hours per 365 days in Modes 1 and 2 and ≤ 90 hours per 365 days in Mode 3. | 31 days |

BASES

ACTIONS
(continued)

B.1 and B.2

With two primary containment/drywell hydrogen mixing subsystems inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by one division of the hydrogen igniters. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist. The verification may be performed as an administrative check by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two primary containment/drywell hydrogen mixing subsystems inoperable for up to 7 days. Seven days is a reasonable time to allow two primary containment/drywell hydrogen mixing subsystems to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit.

C.1

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

SURVEILLANCE
REQUIREMENTS

SR 3.6.3.3.1

Operating each primary containment/drywell hydrogen mixing subsystem from the control room for ≥ 15 minutes ensures that each subsystem is OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan failure, or excessive vibration can be detected for corrective action. The 92 day Frequency is consistent with Inservice Testing Program Frequencies,

INSERT A →

(continued)

INSERT A

The frequency is restricted to COLD SHUTDOWN conditions to limit the opening of the hydrogen mixing inlet and outlet valves during MODES 1, 2, and 3, because these valves have never been demonstrated capable of closing during accident conditions in the drywell (Reference 3). The 92 day frequency is consistent with operating experience, the known reliability of the fan and controls, and the two redundant subsystems available.

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.6.3.3.1 (continued)

Program Frequencies, operating experience, the known reliability of the fan and controls, and the two redundant subsystems available.

SR 3.6.3.3.2

Verifying that each primary containment/drywell hydrogen mixing subsystem flow rate is ≥ 600 cfm ensures that each subsystem is capable of maintaining drywell hydrogen concentrations below the flammability limit. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage when the drywell boundary is not required. 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.

REFERENCES

1. Regulatory Guide 1.7, Revision 2.
 2. USAR, Section 6.2.5.
 3. CR 96-0767.
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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 $A\sqrt{k}$ of 1.0 ft² 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 C →

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

C.1

With one or more hydrogen mixing penetration flow path not within the limitations specified in SR 3.6.5.3.6, the penetration flow paths for hydrogen mixing must be isolated immediately. Since the hydrogen mixing valves have never been demonstrated capable of closing under accident conditions in the drywell, closing the valves ensures drywell integrity should the limitations of SR 3.6.5.3.6 be exceeded.

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.6.5.3.1 (continued)

can be accomplished by de-energizing the source of electric power or removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leakage within limits. The Frequency is based on purge valve use during unit operations.

SR 3.6.5.3.2

This SR ensures that the primary containment/drywell hydrogen mixing isolation valves are closed as required or, if open, open for an allowable reason for limited periods of time. This SR has been modified by a Note indicating the SR is not required to be met when the primary containment/drywell hydrogen mixing inlet or outlet valves are open for pressure control, ALARA or air quality considerations for personnel entry, or Surveillances or special testing of the hydrogen mixing system that require the valve to be open. The 31 day Frequency is consistent with the valve requirements discussed under SR 3.6.5.3.1.

SR 3.6.5.3.3

This SR requires verification that each drywell isolation manual valve and blind flange that is required to be closed during accident conditions is closed. The SR helps to ensure that drywell bypass leakage is maintained to a minimum. Due to the location of these devices, the Frequency specified as "prior to entering MODE 2 or 3 from MODE 4, if not performed in the previous 92 days," is appropriate because of the inaccessibility of the devices and because these devices are operated under administrative controls and the probability of their misalignment is low.

Two Notes are added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since access to these areas is typically restricted during MODES 1, 2, and 3. Therefore, the probability of misalignment of these devices, once they have been verified to be in their proper position, is low. A second Note is included to clarify that the drywell isolation valves that are open under administrative controls are not required to meet the SR during the time that the devices are open.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

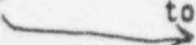
SR 3.6.5.3.4

Verifying that the isolation time of each power operated and each automatic drywell isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analysis. The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program.

SR 3.6.5.3.5

Verifying that each automatic drywell isolation valve closes on a drywell isolation signal is required to prevent bypass leakage from the drywell following a DBA. This SR ensures each automatic drywell isolation valve will actuate to its isolation position on a drywell isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.1.6 overlaps this SR to provide complete testing of the safety function. 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 an unplanned transient if the Surveillance were performed with the reactor at power, since isolation of penetrations would eliminate cooling water flow and disrupt the normal operation of many critical components. Operating experience has shown these components usually pass this Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

INSERT B



REFERENCES

1. USAR, Section 6.2.4.
 2. USAR, Table 6.2-40.
 3. CR 96-0767
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INSERT B

SR 3.6.5.3.6

This SR ensures that the hydrogen mixing valves remain closed during Modes 1, 2, and 3, or, if open, are only open for a limited period of time over a 365 day cycle. Since the hydrogen mixing isolation valves have never been demonstrated capable of closing under accident conditions in the drywell, this SR applies restrictions to the opening of these valves (Reference 3). The frequency of this SR is consistent with the frequency of SR 3.6.3.2 and allows the administrative tracking of the hours open to be performed concurrently with the isolation valve closure verification.

ATTACHMENT 4

Old Technical Specification Pages

CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT/DRYWELL HYDROGEN MIXING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.6.2 Two primary containment/drywell hydrogen mixing systems shall be OPERABLE and the inlet and outlet valves shall be closed, except one inlet or outlet line may be opened for controlling drywell pressure with the following time limits:

- a. In OPERATIONAL CONDITION 3, not to exceed 90 hours* per 365 days, and
- b. In OPERATIONAL CONDITION 1 or 2, not to exceed 5 hours* per 365 days.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one hydrogen mixing system inlet or outlet line open during OPERATIONAL CONDITIONS 1 and 2 for more than 5 hours* per 365 days, immediately close the hydrogen mixing valves or be in at least HOT SHUTDOWN within the next 12 hours.
- b. With one hydrogen mixing system inlet or outlet line open during OPERATIONAL CONDITION 3 for more than 90 hours* per 365 days, immediately close the hydrogen mixing valves or be in at least COLD SHUTDOWN within the next 24 hours.
- c. With one primary containment/drywell hydrogen mixing system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

*When personnel access is necessary and ammonia levels are ≥ 5 ppm, all mixing lines may be open with the fans operating. The time during which the mixing system is in operation for ammonia purge does not contribute to the cumulative total time, provided THERMAL POWER does not exceed 5% of RATED THERMAL POWER.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.6.2 Each primary containment/drywell hydrogen mixing system shall be demonstrated OPERABLE:

- a. At least once per 7 days, by determining the cumulative time that:
 1. The hydrogen mixing system inlet or outlet line has been open during OPERATIONAL CONDITIONS 1 and 2 during the past 365 days, and
 2. The hydrogen mixing system inlet or outlet line has been open during OPERATIONAL CONDITION 3 during the past 365 days.
- b. During each COLD SHUTDOWN, if not performed within the previous 92 days, by:
 1. Starting the system from the control room, and
 2. Verifying that the system operates for at least 15 minutes.
- c. At least once per 18 months by verifying a system flow rate of at least 600 cfm.