

PLANT SYSTEMS

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.5 Four main steam line isolation valves (MSIVs) shall be OPERABLE. |

APPLICABILITY: MODE 1

MODES 2, 3, and 4, except when all MSIVs are closed and |
deactivated.

ACTION:

MODE 1:

With one MSIV inoperable, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within 8 hours; otherwise be in MODE 2 within the next 6 hours.

MODES 2, 3, and 4:

With one or more MSIVs inoperable, subsequent operation in MODE 2, or 3, or 4 may proceed provided the inoperable isolation valve(s) is (are) closed* within 8 hours and verified closed once per 7 days. Otherwise, |
be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Separate condition entry is allowed for each MSIV.

SURVEILLANCE REQUIREMENTS

4.7.1.5.1 DELETED

4.7.1.5.2 Each MSIV shall be demonstrated OPERABLE, pursuant to Specification 4.0.5, by verifying full closure within 10 seconds (120 seconds for MODE 4 only) on an actual or simulated actuation signal. The provisions of Specification 4.0.4 are not applicable for entry into MODE 4 or MODE 3. |

*The MSIVs may be opened to perform Surveillance Requirement 4.7.1.5.2 when |
Reactor Coolant System temperature is greater than or equal to 320°F.

PLANT SYSTEMS

BASES

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES (continued)

LCO

This LCO requires that four MSIVs in the steam lines be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal.

This LCO provides assurance that the MSIVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10CFR100 limits or the NRC Staff approved licensing basis.

APPLICABILITY

The MSIVs must be OPERABLE in MODE 1 and in MODES 2, 3, and 4 except when closed and deactivated when there is significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing the safety function.

In MODES 1, 2, and 3 the MSIVs are required to close within 10 seconds to ensure the accident analysis assumptions are met. In MODE 4 the MSIVs are required to close within 120 seconds to ensure the accident analysis assumptions are met. An engineering evaluation has determined that a Reactor Coolant System (RCS) temperature greater than or equal to 320°F is required to provide sufficient steam energy to provide the motive force to operate the MSIVs. Therefore, below an RCS temperature of 320°F the MSIVs are not OPERABLE and are required to be closed.

In MODE 5 or 6, the steam generators do not contain much energy because their temperature is below the boiling point of water; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

MODE 1

With one MSIV inoperable in MODE 1, action must be taken to restore OPERABLE status within 8 hours. Some repairs to the MSIV can be made with the unit hot. The 8 hour Completion Time is reasonable, considering the low probability of an accident occurring during this time period that would require a closure of the MSIVs.

The 8 hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from other containment isolation valves in that the closed system provides a passive barrier for containment isolation.

PLANT SYSTEMS

BASES

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES (continued)

If the MSIV cannot be restored to OPERABLE status within 8 hours, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging plant systems.

MODES 2, 3, and 4

Since the MSIVs are required to be OPERABLE in MODES 2, 3, and 4, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis. The MSIVs may be opened to perform Surveillance Requirement 4.7.1.5.2.

The 8 hour Completion Time is consistent with that allowed in MODE 1.

For inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, the inoperable MSIVs must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day verification time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

If the MSIVs cannot be restored to OPERABLE status or are not closed within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed at least in MODE 3 within 6 hours, and in MODE 5 within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems. The Action Statement is modified by a note indicating that separate condition entry is allowed for each MSIV.

SURVEILLANCE REQUIREMENTS

4.7.1.5.1 DELETED

PLANT SYSTEMS

BASES

SURVEILLANCE REQUIREMENTS (continued)

4.7.1.5.2 This surveillance demonstrates that MSIV closure time is less than 10 seconds (120 seconds for MODE 4 only) on an actual or simulated actuation signal, when tested pursuant to Specification 4.0.5. A simulated signal is defined as any of the following engineering safety features actuation system instrumentation functional units per Technical Specifications Table 4.3-2: 4.a.1) manual initiation, individual, 4.a.2) manual initiation system, 4.c. containment pressure high-2, 4.d. steam line pressure low, or 4.e. steam line pressure - negative rate high. The MSIV closure time is assumed in the accident analyses. This surveillance is normally performed upon returning the plant to operation following a refueling outage. The test is normally conducted in MODES 3 or 4 with the plant at suitable (appropriate) conditions (e.g., pressure and temperature). The MSIVs should not be tested at power, since even a part stroke exercise increases the risk of valve closure when the unit is generating power.

This surveillance requirement is modified by an exception that will allow entry into and operation in MODES 3 and 4 prior to performing the test to establish conditions consistent with those under which the acceptance criterion was generated. Successful performance of this test within the required frequency is necessary to operate in MODES 3 and 4 with the MSIVs open, to enter MODE 2 from MODE 3, and for plant operation in MODE 1. If this surveillance has not been successfully performed within the required frequency, the MSIVs are inoperable and are required to be closed.

In MODE 4 only, the MSIVs can be considered OPERABLE if the closure time is less than 120 seconds. An engineering evaluation has determined that a RCS temperature greater than or equal to 320°F is required to provide sufficient steam energy to provide the motive force to operate the MSIVs. Therefore, below an RCS temperature of 320°F the MSIVs are not OPERABLE and are required to be closed.