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Director, Nuclear Safety Assurance  
Waterford 3

W3F1-2003-0067

September 11, 2003

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT:** Supplement to Amendment Request  
Main Steam Line Isolation Valves  
Waterford Steam Electric Station, Unit 3  
Docket No. 50-382  
License No. NPF-38

**REFERENCES:** 1. Entergy letter dated December 16, 2002, "Main Steam Line Isolation Valves," License Amendment Request NPF-38-246

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Waterford Steam Electric Station, Unit 3 (Waterford 3) Technical Specifications (TSs) regarding the requirements for the Main Steam Isolation Valves (MSIVs). The proposed change revised the current MSIV TS to more closely reflect NUREG-1432, Revision 2, TS 3.7.2. In addition, it was proposed to remove the MSIVs from the scope of the Containment Isolation Valve (CIV) TS 3/4.6.3, consolidating the TS requirements for the MSIVs in TS 3/4.7.1.5.

On August 18, 2003, the NRC identified the need for additional information to support the review of the proposed change. Entergy and members of your staff held a call to clarify the additional information requested. Entergy's response is contained in Attachment 1.

Changes to the TS pages and TS bases pages which were originally submitted in Reference 1 are proposed. The revised mark-ups are included in Attachment 2 and 3.

The conclusions of the original no significant hazards consideration included in Reference 1 are not affected by any information contained in the supplemental letter; however, minor wording changes are made to reflect the new TS changes described above. The revised text of the no significant hazards consideration is included in Attachment 1. There are no new commitments contained in this letter.

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If you have any questions or require additional information, please contact D. Bryan Miller at 504-739-6692.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 11, 2003.

Sincerely,



K.J. Peters  
Director, Nuclear Safety Assurance  
Waterford Steam Electric Station, Unit 3

KJP/FGB/

Attachments:

1. Response to Request for Additional Information
2. Revised Markup of Technical Specification Pages
3. Revised Markup of Technical Specification Bases Pages

cc: T. P. Gwynn, NRC Region IV  
N. Kalyanam, NRC-NRR  
J. Smith  
N.S. Reynolds  
NRC Resident Inspectors Office  
Louisiana DEQ/Surveillance Division  
American Nuclear Insurers

## **Response to Request for Additional Information**

### **Regarding the MSIV TS Change**

#### **Question 1:**

Licensee has proposed to adopt the APPLICABILITY statement from STS 3.7.2 without the provision that, in MODES 2, 3, [and MODE 4, as requested for Waterford 3], except when all MSIVs are closed they be deactivated, i.e., not adopting "and deactivated." There is no precedent for this nor any reason to grant this relaxation.

#### **Response 1:**

Waterford 3 will incorporate the words "and deactivated" into the proposed Applicability statement. This change has been incorporated in the revised insert for TS 3.7.1.5 provided in Attachment 2.

#### **Question 2:**

Licensee has proposed to move the MSIV closure time from the TS SURVEILLANCE REQUIREMENT to a licensee-controlled document. Again, there is no precedent for this.

#### **Response 2:**

Waterford 3 will revert to the original Surveillance Requirement (SR) wording that included a closure time. This change has been incorporated in the revised insert for TS 3.7.1.5 provided in Attachment 2.

#### **Question 3:**

Licensee has proposed to adopt the STS 3.7.2 NOTE, "Separate Condition entry is allowed for each MSIV," with one or more MSIVs inoperable in MODE 2 or 3 [and MODE 4 for Waterford]. The staff noticed that with this NOTE it is possible to be in a condition that would not support DBA analysis. That is, with more than one MSIV inoperable, and a steam line break inside containment, the plant would be vulnerable to the blowdown of more than one steam generator into containment during the MSIV allowed outage time. Containments are designed to withstand the blowdown from one SG only. The probability of this happening is small but the potential is there because of the separate entry allowed NOTE.

#### **Response 3:**

Waterford 3 will delete the note associated with the Modes 2, 3, and 4 Action statements. In addition, the statement of the required action will be revised to address the inoperability of a single MSIV only. For either Action statement, if more than one (i.e., both) MSIVs are inoperable, the plant will proceed with a shutdown in accordance with TS 3.0.3. This change has been incorporated in the revised insert for TS 3.7.1.5 provided in Attachment 2.

**Question 4:**

Licensee has proposed a relaxation to consolidate the CIV TS requirements and the MSIV requirements with this LAR without the current CIV SR requirement that each CIV be demonstrated OPERABLE prior to returning the valve to service after maintenance. The licensee needs to provide justification for this relaxation.

**Response 4:**

Waterford 3 did not retain a SR equivalent to the CIV SR 4.6.3.1. The Improved Standard Technical Specifications (NUREG-1432) do not include a requirement for the MSIVs (ITS 3.7.2) or for the Containment Isolation Valves (ITS 3.6.3) similar to the existing Waterford 3 SR 4.6.3.1. As the proposed change was developed using the ITS as a model, it was proposed without the SR from the CIV specification.

This change is considered to be acceptable based on routine practice that includes appropriate post-maintenance testing prior to returning to service or declaring a component operable. This practice is based on the Entergy Quality Assurance Program Manual (QAPM) which in turn is based on 10 CFR 50, Appendix B. Entergy's QAPM establishes requirements to have a test control program that includes post-maintenance testing. This requirement, in conjunction with SR 4.0.2, ensures that appropriate testing is performed prior to returning a component to service. Surveillances have to be met and performed in accordance with SR 4.0.2, prior to returning equipment to OPERABLE status. Upon completion of maintenance, the appropriate post-maintenance testing is required to declare equipment OPERABLE. This includes ensuring applicable SRs are not failed and their most recent performance is in accordance with SR 4.0.2. Post-maintenance testing may not be possible in the current MODE or other conditions specified in the Applicability statement due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This latter consideration is also consistent with TS 3.0.5, which permits a component to be returned to service under administrative controls solely to perform testing to demonstrate its operability or the operability of other equipment. It will allow operation to proceed to a MODE or other specified condition where other necessary post-maintenance tests can be completed.

**No Significant Hazards Consideration**

The changes made in response to items 1, 2 and 3 above have an impact on the text of the responses to the No Significant Hazards Consideration. In particular, these changes delete one administrative change and two less restrictive changes that were described in that text. Section 5.2 from Attachment 1 of the original submittal has been revised below:

**5.2 No Significant Hazards Consideration**

Technical Specification 3/4.7.1.5, Main Steam Isolation Valves, will be modified to more closely reflect Specification 3.7.2, Main Steam Isolation Valves (MSIVs), in NUREG-1432, "Standard Technical Specifications Combustion Engineering Plants," Revision 2. The change will extend the allowed outage time for an inoperable MSIV from 4 hours to 8 hours and clarify the

applicability requirements in MODES 2, 3, and 4. This change will also remove the MSIVs from the scope of Technical Specification 3/4.6.3, "Containment Isolation Valves," by removing the MSIVs from Technical Requirements Manual Table 3.6-2, Containment Isolation Valves. Finally, this change deletes an expired interim position to Technical Specification 3/4.6.3 for containment spray valves CS-125A(B). The specific changes are described in more detail below:

1) Administrative and/or neutral/equivalent:

- Add "MSIV" acronym to title line and reword Limiting Condition for Operation without changing its intent.
- Change Mode 1 Action end state to go to Mode 2 verses Mode 3 since once Mode 2 is entered the Mode 1 Action is no longer applicable.
- Assure MSIV Operability for containment isolation purposes via proposed Technical Specification 3/4.7.1.5 rather than Technical Specification 3/4.6.3.
- Delete expired interim position on Technical Specification 3/4.6.3.

2) Less restrictive:

- Change Mode 2, 3, and 4 applicability by adding "except when all MSIVs are closed and deactivated."
- Extend Allowed Outage Time for an inoperable MSIV from 4 hours to 8 hours.
- Surveillance requirements required to be performed for entry into Mode 1 and 2 only.

3) More restrictive:

- Add requirement to verify valves closed per the Mode 2, 3, and 4 Action are closed every 7 days.
- Add new Surveillance Requirement 4.7.5.1b to verify isolation on an actuation signal.

The "administrative and/or neutral/equivalent" changes will not be discussed further since they do not change the requirements or intent of the current Technical Specifications. Entergy Operations, Inc. has evaluated the less restrictive and more restrictive changes to determine whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change to the applicability for the main steam line isolation valves will not require operability when all MSIVs are closed and deactivated in Modes 2, 3, and 4. Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. In the closed position the MSIVs are already in their safety function position. In this position, there can be no increase in the probability or consequences of an accident.

The consequences of previously analyzed events are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event. When the MSIVs are

closed in Modes 2, 3, and 4 they are performing their design function for containment isolation and for main steam line isolation on the secondary side of the plant. The proposed change does not alter the initial conditions assumed in the safety analyses. The plant parameters assumed for the analyses are maintained within assumed limits through compliance with the Technical Specifications and plant procedures. Additionally, the proposed change does not impose any new safety analysis limits. Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

The proposed change increases the allowed outage time for an inoperable MSIV from 4 hours to 8 hours in Modes 1 through 4. Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. Extending the time available to restore an inoperable component does not have a detrimental impact on the integrity of plant components nor does it increase the probability that these components will fail. The proposed changes are not related in any way to the probability of failure of a plant structure, system or component which would result in the occurrence of an analyzed event. Because the probability of failure of plant equipment is not affected, there is no impact on the probability of occurrence of a previously analyzed accident.

The consequences of previously analyzed events are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event. The steam line break analysis in FSAR Section 15.1.3 assumes a failure of one MSIV to close. For the containment isolation function, in the event of an inoperable MSIV coincident with a LOCA, the closed system (i.e., the steam generator tubes and main steam line piping) remains intact. The closed system is subjected to a Type A containment leakage test, is missile protected, and seismic category I piping, and typically has flow through it during normal operation such that any loss of integrity could be continually observed through leakage detection systems within containment and system walkdowns outside containment. Therefore, with an inoperable MSIV the safety analysis (both LOCA and steam line break) remains valid assuming no additional failures. The increase in core damage frequency and large early release fraction, resulting from the increased restoration time, is negligible. The proposed 8-hour Allowed Outage Time is sufficiently short to ensure that the MSIVs are operable when required to perform their design function. The 8-hour Allowed Outage Time to close an inoperable valve in Modes 2, 3, or 4 is based on the small likelihood of an accident occurring that will need the MSIV isolation function during this time period and the fact that the valves are located on a closed system with respect to containment integrity. The proposed change does not alter the initial conditions assumed in the safety analyses. The plant parameters assumed for the analyses are maintained within assumed limits through compliance with the Technical Specifications and plant procedures. Additionally, the proposed change does not impose any new safety analyses limits. Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

The proposed change will add a Note to the MSIV surveillance to allow entry into Mode 3 for testing at hot conditions. Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The addition of this allowance for testing is not related in any way to the probability of failure of a plant structure, system or component which would result in the occurrence of an analyzed event. Because the

probability of failure of plant equipment is not affected, there is no impact on the probability of occurrence of a previously analyzed accident.

The consequences of previously analyzed events are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event. The proposed change will allow entry into Mode 3 in order to perform MSIV testing at hot conditions. However, prior to this testing, the MSIVs are not known to be inoperable from any other cause other than not having performed the Surveillance Requirement to demonstrate closure times at hot plant conditions, which they are expected to pass. The proposed change will allow entry into Mode 3 for the condition where both MSIVs may require closure time testing. This testing allowance is limited to Mode 3, and must be completed prior to entry into Modes 1 or 2. The proposed change does not alter the initial conditions assumed in the safety analyses. The plant parameters assumed for the analyses are maintained within assumed limits through compliance with the Technical Specifications and plant procedures. Additionally, the proposed change does not impose any new safety analyses limits. Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

The proposed change will require the MSIV that is closed in accordance with the Mode 2, 3, and 4 Action be verified closed once per seven days. Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The addition of this requirement is not related in any way to the probability of failure of a plant structure, system or component which would result in the occurrence of an analyzed event. Because the probability of failure of plant equipment is not affected, there is no impact on the probability of occurrence of a previously analyzed accident.

The consequences of previously analyzed events are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event. The proposed change adds a Surveillance Requirement to Technical Specification 3/4.7.1.5 to verify proper MSIV isolation on an actuation signal. This is not a new Surveillance Requirement for the Waterford 3 Technical Specifications. Technical Specification 3.3.2, Engineering Safety Features Actuation System Instrumentation, Surveillance Requirement 4.3.2.1 (Table 4.3-2 Item 4.d) requires a functional test of the actuation relay (K305) once per 18 months which verifies automatic closure of the MSIVs on a simulated main steam isolation signal. The proposed change does not alter the initial conditions assumed in the safety analyses. The plant parameters assumed for the analyses are maintained within assumed limits through compliance with the Technical Specifications and plant procedures. Additionally, the proposed change does not impose any new safety analyses limits. Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

Therefore, none of the proposed change described above involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change does not involve a physical alteration of the plant. No new equipment is being introduced, and installed equipment is not being operated in a new or different manner. There is no change being made to the parameters within which the plant is operated, or to the setpoints at which protective or mitigative actions are initiated. No alteration in the procedures which ensure the plant remains within analyzed limits is being proposed, and no change is being made to the procedures relied upon to respond to an off-normal event. As such, no new failure modes are being introduced.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The margin of safety is established through equipment design, limitations on operating parameters, and the setpoints at which automatic actions are initiated. No equipment design features are impacted by this change, no operating parameters are revised, and no changes to the actuation setpoints are involved.

The design safety function of the MSIVs is to close upon receipt of a main steam isolation signal. With the MSIVs already closed in Modes 2, 3 or 4, the design function is satisfied.

The proposed change will increase the allowed outage time from 4 hours to 8 hours for an inoperable MSIV. The proposed change will still ensure that the inoperable MSIV is restored or closed in a reasonable time of 8 hours. Once closed, the MSIVs meet their design safety function.

The proposed change will add a note indicating the Surveillance Requirements must be performed prior to entry into Modes 1 or 2. The MSIVs are expected to pass the Surveillance Requirement and are not known to be inoperable for any other reason than not having performed the valve closure test at hot conditions. The testing is limited to Mode 3, when the reactor is subcritical, thus verifying the MSIV closure times prior to power operation.

The proposed change will require an MSIV, which is closed in accordance with the Mode 2, 3, and 4 Action, be verified closed once per seven days. This requirement provides additional assurance that the MSIV is closed and performing its design safety function.

The proposed change adds a Surveillance Requirement to Technical Specification 3/4.7.1.5 to verify proper MSIV isolation on an actuation signal. This, however, is not a new Surveillance Requirement for the Technical Specifications. Technical Specification 3.3.2, Engineering Safety Features Actuation System Instrumentation, Surveillance Requirement 4.3.2.1 (Table 4.3-2 Item 4.d) requires a functional test of the actuation

relay (K305) once per 18 months which verifies automatic closure of the MSIVs on a simulated main steam isolation signal.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

**Attachment 2**

**To**

**W3F1-2003-0067**

**Revised Markup of Technical Specification Pages**

**(Note – only the TS 3.7.1.5 Insert is affected by this  
submittal; for other affected TS, see original submittal. )**

### **TECHNICAL SPECIFICATION INSERT**

3.7.1.5 Two MSIVs shall be OPERABLE.

**APPLICABILITY:** MODE 1, and  
MODES 2, 3, and 4, except when all MSIVs are closed and deactivated.

**ACTION:**

**MODE 1**

With one MSIV inoperable, restore the valve to OPERABLE status within 8 hours or be in STARTUP within the next 6 hours.

**MODES 2, 3 and 4**

With one MSIV inoperable, close the valve within 8 hours and verify the valve is closed once per 7 days. Otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The provisions of Specification 3.0.4 are not applicable.

### **SURVILLANCE REQUIREMENTS**

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**Note:** Required to be performed for entry into MODES 1 and 2 only.

4.7.1.5 Each MSIV shall be demonstrated OPERABLE:

- a. By verifying full closure within 4.0 seconds when tested pursuant to Specification 4.0.5.
- b. By verifying each MSIV actuates to the isolation position on an actual or simulated actuation signal at least once per 18 months.

**Attachment 3**

**To**

**W3F1-2003-0067**

**Revised Markup of Technical Specification Bases Pages**

**For Information Only**

## PLANT SYSTEMS

### BASES

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#### 3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant offsite radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1 gpm primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss-of-offsite electrical power. These values are consistent with the assumptions used in the safety analyses.

#### 3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVE (MSIV)

*Replace w/ Bases Insert*

~~The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses. The Surveillance Requirement to verify isolation in less than or equal to 4 seconds is based on static testing. The static test using 4 seconds demonstrates the ability of the MSIVs to close in less than or equal to the 7 second required closure time under design basis accident conditions.~~

#### 3/4.7.1.6 MAIN FEEDWATER ISOLATION VALVES

The Main Feedwater Isolation Valves (MFIVs) isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). Closure of the MFIVs terminates flow to both steam generators, mitigating the consequences for feedwater line breaks (FWLBs). Closure of the MFIVs effectively terminates the addition of main feedwater to an affected steam generator, limiting the mass and energy release for Main Steam Line Breaks (MSLBs) or FWLBs inside containment, and reducing the cooldown effects for MSLBs.

The MFIVs isolate the non-safety related feedwater supply from the safety related portion of the system. In the event of a secondary side pipe rupture inside containment, the valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of Emergency Feedwater (EFW) to the intact steam generator.

One MFIV is located on each MFW line, outside, but close to, containment. The MFIVs are located upstream of the EFW injection point so that EFW may be supplied to a steam generator following MFIV closure. The piping volume from the valve to the steam generator must be accounted for in calculating mass and energy releases, and refilled prior to EFW reaching the steam generator following either a MSLB or FWLB.

### **BASES INSERT**

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break. MSIV closure terminates flow from the unaffected (intact) steam generator.

One MSIV is located in each main steam line outside of, but close to, containment. The MSIVs are downstream from the main steam safety valves (MSSVs), atmospheric dump valves, and emergency feedwater pump turbine steam supplies to prevent their being isolated from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the other, and isolates the turbine, Steam Bypass System, and other auxiliary steam supplies from the steam generators.

The MSIVs close on a main steam isolation signal (MSIS) generated by either low steam generator pressure or high containment pressure. The MSIVs fail as is on loss of power to the actuator however; the operators for the MSIV are furnished with redundant hydraulic fluid dump valves powered by diverse power, to ensure that no single electrical failure will prevent valve closure. The MSIVs may also be actuated manually.

A description of the MSIVs is found in Final Safety Analysis Report (FSAR), Section 10.3.

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment, as discussed in FSAR, Section 6.2. It is also influenced by the accident analysis of the SLB events presented in FSAR, Section 15.1.3. The design precludes the blowdown of more than one steam generator, assuming a single active component failure (e.g., the failure of one MSIV to close on demand).

The OPERABILITY of the MSIVs ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment.

The MSIVs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

This Limiting Condition for Operation (LCO) requires that the MSIV in each of the two 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 10 CFR 100 limits or the NRC staff approved licensing basis.

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

In MODES 5 and 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.

#### MODE 1 ACTION

With one MSIV inoperable in MODE 1, time is allowed to restore the component to OPERABLE status. Some repairs can be made to the MSIV with the unit hot. The 8-hour Allowed Outage Time is reasonable, considering the probability of an accident occurring during the time period that would require closure of the MSIVs.

The 8-hour Allowed Outage 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 an additional means for containment isolation.

If the MSIV cannot be restored to OPERABLE status within 8 hours, the unit must be placed in a MODE in which the ACTION does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and the MODE 2, 3, and 4 ACTION would be entered. The Allowed Outage Time is reasonable, based on operating experience, to reach MODE 2 and close the MSIVs in an orderly manner and without challenging unit systems.

#### MODE 2, 3, and 4 ACTION

Since the MSIVs are required to be OPERABLE in MODES 2, 3 and 4, an inoperable MSIV 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 8-hour Allowed Outage Time is consistent with that allowed in the MODE 1 ACTION. The 8-hour Allowed Outage Time begins from the time when the MSIV is first determined to be inoperable. For example:

- If the MSIV becomes inoperable in MODE 1 and the plant is taken to MODE 2 in accordance with the MODE 1 ACTION and greater than 8 hours has expired since the MSIV became inoperable then the MSIV must be closed immediately upon entry into MODE 2 or shutdown to Mode 3 must be completed within the next 6 hours.
- If an MSIV becomes inoperable in MODE 2, it must be restored to OPERABLE or closed within 8 hours. If not, the plant must be in MODE 3 within the next 6 hours and MODE 5 in the following 30 hours.
- If an MSIV becomes inoperable in either MODE 3 or 4, it must be restored to OPERABLE or closed within 8 hours. If not, the plant must be in MODE 5 within the next 30 hours. Since the plant is already in MODE 3 or lower the 6-hour allowance for reaching Mode 3 is not applicable.

An inoperable MSIV that cannot be restored to OPERABLE status within the specified Allowed Outage Time and is closed, 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 interval is

reasonable, based on engineering judgment, MSIV status indications available in the control room, and other administrative controls to ensure these valves are in the closed position.

If an MSIV cannot be restored to OPERABLE status or closed within the associated Allowed Outage 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 in at least MODE 3 within 6 hours, and in MODE 5 within the following 30 hours. These 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.

### Surveillance Requirements

The Surveillance Requirements (SR) are modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, in order to establish conditions consistent with those under which the acceptance criterion was generated.

SR 4.7.1.5a verifies that the closure time of each MSIV is within its limit when tested pursuant to Specification 4.0.5. Specification 4.0.5 invokes the Inservice Testing Program. The static test using 4.0 seconds demonstrates the ability of the MSIVs to close in less than or equal to the 7 seconds required closure time under design basis accident conditions. This SR is normally performed during a refueling outage but may be performed upon returning the unit to operation following a refueling outage. The MSIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power. As the MSIVs are not tested at power, they are exempt from the ASME Code, Section XI (Inservice Inspection, Article IWW-3400), requirements during operation in MODES 1 and 2.

The Frequency for this SR is in accordance with the Specification 4.0.5.

This test may be conducted in MODE 3, with the unit at operating temperature and pressure.

SR 4.7.1.5b verifies that each MSIV can close on an actual or simulated actuation signal. This surveillance may be performed upon returning the plant to operation following a refueling outage. The Frequency of MSIV testing is every 18 months. The 18-month Frequency for testing is based on the refueling cycle. Operating experience has shown that these components usually pass the surveillance. Therefore, this Frequency is acceptable from a reliability standpoint.