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W3F1-2004-0016

February 26, 2004

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Bases Update to the NRC for the Period
July 24, 2003 Through February 25, 2004

Dear Sir or Madam:

Pursuant to Waterford Steam Electric Station Unit 3 Technical Specification 6.16, Entergy Operations, Inc. (EOI) hereby submits an update of all changes made to Waterford 3 Technical Specification Bases since the last submittal per letter W3F1-2003-0055, dated July 24, 2003. This TS Bases update is well within the update frequency listed in 10 CFR 50.71(e).

There are no commitments associated with this submittal. Should you have any questions or comments concerning this submittal, please contact Ron Williams at (504) 739-6255.

Sincerely,

Gautam Sen

G. Sen
Licensing Manager
GS/RLW/cbh

Attachment 1 Waterford 3 Technical Specification Bases Revised Pages

A001

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ATTACHMENT 1
To W3F1-2004-0016

Waterford 3 Technical Specification Bases Revised Pages

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TO W3F1-2004-0016

Waterford 3 Technical Specification Bases Revised Pages

T.S. Bases Change No.	Implementation Date	Affected TS Bases Pages	Topic of Change
29	10/30/03	B 3/4 6-5	Change to TS Bases section was implemented by ER-W3-2002-0227 to indicate SI-406A(B), SDC suction relief valves, applicability to TS 3.6.3, "Containment Isolation Valves" only applies to their ability to close and remain closed under maximum expected containment pressure conditions in the reverse flow direction. The functionality of SI-406A(B) is and will remain under the purview of TS 3.4.8.3. These valves were added to TRM Table 3.6-2 containment isolation valve list. SI-406A(B) was also added to TRM Table 3.6-1, Containment Leakage Paths, to indicate they would be Type C tested to ensure containment integrity.
30 & 31	11/13/03	**Page** / **Change #** B 3/4 0-4 30 B 3/4 0-7 30 B 3/4 0-8 30 B 3/4 4-11 30 B 3/4 6-6b 30 B 3/4 7-2d 30 B 3/4 7-3 31 B 3/4 7-3a 31 B 3/4 7-3b 31 B 3/4 7-3c 31 B 3/4 7-3d 31 B 3/4 7-3e (new) 30 & 31 B 3/4 7-3f (new) 30 & 31 B 3/4 7-3g (new) 30 & 31	Change No. 30 to TS Bases sections 3/4.0, 3/4.6.5, 3/4.7.1.2, and 3/4.7.1.6 were implemented by ER-W3-2003-0610-000. Change clarified the TS Bases to be consistent with the TS as amended in TS Amendment 189 and made minor editorial changes to the text to reflect the change in terminology from "Specification 4.0.5" to "Inservice Testing Program. The amendment revised and relocated Surveillance Requirement (SR) 4.0.5, "Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2 and 3 components...", and SR 4.4.9, "Structural Integrity", to the administrative section of the Technical Specifications under sections 6.5.8, "Inservice Testing Program" and 6.5.7, "Reactor Coolant Pump Flywheel Inspection Program", respectively. Additionally, the amendment approved the relocation of TS 3.4.9, "Reactor Coolant System Structural Integrity" and its Bases to the Waterford 3 Technical Requirements Manual (TRM). Change No. 31 to TS Bases section 3/4.7.1.5 was implemented by ER-W3-2002-321-001. Change clarified the TS Bases to be consistent with Technical Specifications 3/4.7.1.5 "Main Steam Line Isolation Valves (MSIVs)" that removed the MSIVs from the scope of containment isolation valve TS 3/4.6.3 and consolidated all TS requirements for the MSIVs into this TS section.

TECHNICAL SPECIFICATION BASES
CHANGE NO. 29 REPLACEMENT PAGE(S)
(1 page)

Replace the following page of the Waterford 3 Technical Specification Bases with the attached page. The revised page is identified by Change Number 29 and contains the appropriate DRN number and a vertical line indicating the areas of change.

Remove	Insert
B 3/4 6-5	B 3/4 6-5

3/4.6.2.1 and 3/4.6.2.2 CONTAINMENT SPRAY SYSTEM and CONTAINMENT COOLING SYSTEM (Continued)

selecting the 18 month frequency were the known reliability of the Cooling Water System, the two train redundancy, and the low probability of a significant degradation of flow occurring between surveillances. The flow measurement for the 18 month test shall be done in a configuration equivalent to the accident lineup to ensure that in an accident situation adequate flow will be provided to the containment fan coolers for them to perform their safety function

Verifying that each valve actuates to the full open position provides further assurance that the valves will travel to their full open position on a Safety Injection Actuation Signal.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of GDC 54 through GDC 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.
→(DRN 03-666, Ch. 25)
The asterisk "*" footnote associated with the LCO statement allows the opening of closed containment isolation valves on an intermittent basis under administrative controls. The valves within the scope of this footnote include locked or sealed closed containment isolation valves and deactivated automatic containment isolation valves secured in the isolation position. Acceptable administrative controls must include the following considerations: (1) stationing an operator, who is in constant communication with control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.
←(DRN 03-666, Ch. 25)
"Containment Isolation Valves", previously Table 3.6-2, have been incorporated into the Technical Requirements Manual (TRM).

For penetrations with multiple flow paths, only the affected flow path(s) is required to be isolated when a containment isolation valve in that flow path is inoperable. The flow path may be isolated with the inoperable valve in accordance with the Action requirements, provided the leakage rate acceptance criteria, as applicable, is met and controls are in place to ensure the valve is closed. Also, the penetration is required to meed the requirements of GDC-54, and GDC-55 through GDC 57, as applicable, for all the unisolated flow paths.

→(DRN 03-1541, Ch. 29)
For the Shutdown Cooling System suction line relief valves (SI-406A and SI-406B), TS 3/4.6.3 is only applicable in the close direction. The capability of these valves to lift at the specified setpoint is addressed by TS 3.4.8.3.
←(DRN 03-1541, Ch. 29)

TECHNICAL SPECIFICATION BASES
CHANGE NO. 30 & 31 REPLACEMENT PAGE(S)
(14 pages)

Replace the following pages of the Waterford 3 Technical Specification Bases with the attached pages. The revised page is identified by Change Number 30 and/or 31 and contains the appropriate DRN numbers and vertical lines indicating the areas of change.

Remove	Insert	Change No.
B 3/4 0-4	B 3/4 0-4	30
B 3/4 0-7	B 3/4 0-7	30
B 3/4 0-8	B 3/4 0-8	30
B 3/4 4-11	B 3/4 4-11	30
B 3/4 6-6b	B 3/4 6-6b	30
B 3/4 7-2d	B 3/4 7-2d	30
B 3/4 7-3	B 3/4 7-3	31
B 3/4 7-3a	B 3/4 7-3a	31
B 3/4 7-3b	B 3/4 7-3b	31
B 3/4 7-3c	B 3/4 7-3c	31
B 3/4 7-3d	B 3/4 7-3d	31
----------	B 3/4 7-3e	30, 31
----------	B 3/4 7-3f	30, 31
----------	B 3/4 7-3g	30, 31

When a shutdown is required to comply with ACTION requirements, the provisions of Specification 3.0.4 do not apply because they would delay placing the facility in a lower MODE of operation.

Specification 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Specification is to provide an exception to Specification 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of Surveillance Requirements to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed Surveillance Requirements. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions and must be reopened to perform the Surveillance Requirements.

An example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of a Surveillance Requirement on another channel in the other trip system. A similar example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to permit the logic to function and indicate the appropriate response during the performance of a Surveillance Requirement on another channel in the same trip system.

→(DRN 03-1807, Ch. 30)
Specification 4.0.1 through 4.0.4 establish the general requirements applicable to Surveillance Requirements. These requirements are based on the Surveillance Requirements stated in the Code of Federal Regulations, 10 CFR 50.36(c)(3):
←(DRN 03-1807, Ch. 30)

"Surveillance requirements are requirements relating to test, calibration, or inspection to ensure that the necessary quality of systems and components is maintained, the facility operation will be within safety limits, and that the limiting condition of operation will be met."

→ (DRN 03-524, Ch. 23)

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the allowed outage times of the required actions for the applicable LCO begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the allowed outage times of the required actions for the applicable LCO begin immediately upon the failure of the Surveillance.

Satisfactory completion of the Surveillance within the delay period allowed by this Specification, or within the allowed outage time of the actions, restores compliance with Specification 4.0.1.

← (DRN 03-524, Ch. 23)

Surveillance Requirements do not have to be performed on inoperable equipment because the ACTION requirements define the remedial measures that apply. However, the Surveillance Requirements have to be met to demonstrate that inoperable equipment has been restored to OPERABLE status.

Specification 4.0.4 establishes the requirement that all applicable surveillance must be met before entry into an OPERATIONAL MODE or other condition of operation specified in the Applicability statement. The purpose of this specification is to ensure that system and component OPERABILITY requirements or parameter limits are met before entry into a MODE or condition for which these systems and components ensure safe operation of the facility. This provision applies to changes in OPERATIONAL MODES or other specified conditions associated with plant shutdown as well as startup.

Under the provisions of this specification, the applicable Surveillance Requirements must be performed within the specified surveillance interval to ensure that the Limiting Condition for Operation are met during initial plant startup or following a plant outage.

When a shutdown is required to comply with ACTION requirements, the provisions of Specification 4.0.4 do not apply because this would delay placing the facility in a lower MODE of operation.

→(DRN 03-1807, Ch. 30)

←(DRN 03-1807, Ch. 30)

→(DRN 03-1807, Ch. 30)

This page not used.

←(DRN 03-1807, Ch. 30)

→(DRN 03-1807, Ch. 30)

3/4.4.9 STRUCTURAL INTEGRITY This section is deleted.

←(DRN 03-1807, Ch. 30)

3/4.4.10 REACTOR COOLANT SYSTEM VENTS

Reactor Coolant System vents are provided to exhaust noncondensible gases and/or steam from the primary system that could inhibit natural circulation core cooling. The OPERABILITY of at least one reactor coolant system vent path from the reactor vessel head and the pressurizer steam space ensures the capability exists to perform this function.

The valve redundancy of the reactor coolant system vent paths serves to minimize the probability of inadvertent or irreversible actuation while ensuring that a single failure of a vent valve, power supply, or control system does not prevent isolation of the vent path.

The function, capabilities, and testing requirements of the reactor coolant system vent systems are consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

3/4.6.5 VACUUM RELIEF VALVES (Continued)

With one of the required vacuum relief lines inoperable, the inoperable line must be restored to OPERABLE status within 72 hours. The specified time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA.

If the vacuum relief line cannot be restored to OPERABLE status within the required Allowed Outage 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 6 hours and to MODE 5 within the following 30 hours. The Allowed Outage 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.

→(DRN 03-1807, Ch. 30)

The SR references the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. Therefore, SR Frequency is governed by the Inservice Testing Program.

←(DRN 03-1807, Ch. 30)

3/4.7.1.2 EMERGENCY FEEDWATER SYSTEM (Continued)

Surveillance Requirements

a. Verifying the correct alignment for manual, power operated, and automatic valves in the EFW water and steam supply flow paths provides assurance that the proper flow paths exist for EFW operation. This Surveillance Requirement (SR) does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position.

→(DRN 03-1807, Ch. 30)

b. The SR to verify pump OPERABILITY pursuant to the Inservice Testing Program ensures that the requirements of ASME Code Section XI are met and provides reasonable assurance that the pumps are capable of satisfying the design basis accident flow requirements. Because it is undesirable to introduce cold EFW into the steam generators while they are operating, testing is typically performed on recirculation flow. Such in-service tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance.

←(DRN 03-1807, Ch. 30)

This SR is modified to indicate the SR should be deferred until suitable test conditions have been established. This deferral is required because there is an insufficient steam pressure to perform post maintenance activities which may need to be completed prior to performing the required turbine-driven pump SR. This deferral allows the unit to transition from MODE 4 to MODE 3 prior to the performance of the SR and provides a 24 hour period once a steam generator pressure of 750 psig is reached to complete the required post maintenance activities and SR. If this SR is not completed within the 24 hour period or fails, then the appropriate ACTION must be entered. The twenty-five percent grace period allowed by TS 4.0.2 can not be applied to the 24 hour period.

c. The SR for actuation testing ensures that EFW can be delivered to the appropriate steam generator in the event of any accident or transient that generates EFAS and/or MSIS signals, by demonstrating that each automatic valve in the flow path actuates to its correct position and that the EFW pumps will start on an actual or simulated actuation signal. This Surveillance covers the automatic flow control valves, automatic isolation valves, and steam admission valves but is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month frequency is acceptable, based on the design reliability and operating experience of the equipment.

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.

→(DRN 03-1737, Ch. 31)

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVE (MSIV)

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).

←(DRN 03-1737, Ch. 31)

→(DRN 03-1737, Ch. 31)

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

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, 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.

←(DRN 03-1737, Ch. 31)

→(DRN 03-1737, Ch. 31)

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

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.

←(DRN 03-1737, Ch. 31)

→(DRN 03-1737, Ch. 31)

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

SR 4.7.1.5a verifies that the closure time of each MSIV is within its limit when tested pursuant to 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 IWV-3400), requirements during operation in MODES 1 and 2.

The Frequency for this SR is in accordance with the Inservice Testing Program.

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.

←(DRN 03-1737, Ch. 31)

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.

3/4.7.1.6 MAIN FEEDWATER ISOLATION VALVES (con't)

The MFIVs close on receipt of a Main Steam Isolation Signal (MSIS) generated by either low steam generator pressure or high containment pressure. The MFIVs may also be actuated manually from the control room. The MSIS also actuates the Main Steam Isolation Valves (MSIVs), Main Feedwater Regulating Valves (MFRVs) and Startup Feedwater Regulating Valves (SFRVs) to close. The Feedwater Regulating Valve Bypass Valves are normally closed and deactivated during power operation.

In MODES 1, 2, 3, and 4, the MFIVs are required to be OPERABLE, except when they are closed and deactivated or isolated by either a closed manual valve or closed and deactivated automatic valve, in order to limit the amount of available fluid that could be added to the Steam Generator and/or containment in the case of a secondary system pipe break inside containment. When a MFIV is closed and deactivated or isolated by a closed manual valve or closed and deactivated automatic valve, it is already performing its safety function.

In MODES 5 and 6, residual heat removal is through the Shutdown Cooling System and MFW is not required. Therefore, the MFIVs are normally closed.

With one MFIV inoperable, action must be taken to close or isolate the inoperable valve within 72 hours. When the valve is closed or isolated, it is performing the required safety function (e.g., to isolate the main feedwater line) and continued operation in the applicable MODES is allowed.

The 72 hour Completion Time takes into account the back up capability afforded by the OPERABLE MFRVs and the SFRVs, diversity of actuation signals, and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The 72 hour Completion Time is reasonable to return the MFIV to OPERABLE status, close the MFIV, or otherwise isolate the affected flow path.

Inoperable MFIVs that cannot be restored to OPERABLE status within 72 hours, but are closed or isolated, must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day time is reasonable in view of valve status indications available in the control room, and other administrative controls to ensure that these valves are closed or isolated.

If the MFIVs cannot be restored to OPERABLE status, closed, or isolated in the required 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 in the following 30 hours. The allowed completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

3/4.7.1.6 MAIN FEEDWATER ISOLATION VALVES (con't)

The TS is annotated with a 3.0.4 exemption, allowing entry into the applicable MODES to be made with an inoperable MFIV closed or isolated as required by the ACTIONS. The ACTIONS allow separate condition entry for each valve by using "With one or more MFIV...". This prevents immediate entry into TS 3.0.3 if both MFIVs are declared inoperable.
→(DRN 03-1807, Ch. 30)

The Surveillance Requirement to verify isolation in less than or equal to 5 seconds is based on the time assumed in the accident and containment analyses. The static test demonstrates the ability of the MFIVs to close in less than or equal to 5 seconds under design basis accident conditions. The MFIVs should not be tested at power since even a partial stroke exercise increases the risk of a valve closure with the plant generating power and would create added cyclic stresses. The Surveillance to verify each MFIV can close on an actual or simulated actuation signal is normally performed when the plant is returning to operation following a refueling outage. Verification of valve closure on an actuation signal is not required until entry into Mode 3 consistent with TS 3.3.2. The 18 month frequency is based on the refueling cycle. Verification of closure time is performed per the Inservice Testing Program. This frequency is acceptable from a reliability standpoint and is in accordance with the Inservice Testing Program.
←(DRN 03-1807, Ch. 30)
→(DRN 02-1684, Ch. 15)

Credited Non-Safety Related Support Systems for MFIV Operability

Reactor Trip Override (RTO) and the Auxiliary Feedwater (AFW) Pump High Discharge Pressure Trip (HDPT) are credited for rapid closure of the Main Feedwater Isolation Valves (MFIVs) during main steam and feedwater line breaks. Crediting of these non-safety features was submitted to the NRC as a USQ and approved. (Reference letter dated September 5, 2000 from the NRC to Charles M. Dugger, "Waterford 3 Steam Electric Station, Unit 3 - Issuance of Amendment RE: Addition of Main Feedwater Isolation Valves to Technical Specifications and Request for NRC Staff Review of an Unreviewed Safety Question.")

The feature of RTO that is credited for MFIV closure is the rapid SGFP speed reduction upon reactor trip initiation. This feature reduces the differential pressure across the valve disc at closure, thus allowing rapid valve closure. Therefore, the RTO feature must be able to decrease SGFP speed to minimum on a reactor trip during SGFP operation for OPERABILITY of the MFIVs.

The AFW Pump HDPT reduces the differential pressure across the valve disc at closure during AFW Pump operation. Therefore, this feature must be functional during AFW Pump operation for OPERABILITY of the MFIVs. When the AFW pump is not running, this trip is not required.

In MODES 1, 2, 3, and 4, the MFIVs are required to be OPERABLE. Because the MFIVs are required to be OPERABLE in MODES 1, 2, 3, and 4, RTO must be able to decrease SGFP
←(DRN 02-1684, Ch. 15)

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→(DRN 02-1684, Ch. 15)

speed to minimum on a reactor trip and the AFW Pump HDPT must be functional, to support closure of the valve. If RTO is unable to decrease running SGFP(s) speed to minimum on a reactor trip with the SGFPs running, both MFIVs must be declared INOPERABLE, and Technical Specification 3.7.1.6 must be entered. If the AFW Pump HDPT is non-functional with the AFW pump running, the AFW pump should be secured immediately or both MFIVs must be declared INOPERABLE, and Technical Specification 3.7.1.6 must be entered.

RTO and AFW Pump HDPT Test Requirements

The RTO and AFW pump high pressure trip are subjected to a testing program similar to comparable safety related instrumentation to provide assurance of the reliability of these non-safety related functions credited to support the MFIV safety related closure function.

→(DRN 03-1807, Ch. 30)

The testing requirements for the RTO credited function should demonstrate the ability of RTO to reduce SGFP speed upon an actual or simulated actuation signal. The test requirements do not require timing the response because in the limiting FWLB scenario, RTO is required for compliance with a 5 second Technical Specification closure; however, the containment analyses allow longer closure times during this event. Even if RTO were to fail, the MFIV would eventually close as the pressure across the valve equalizes to the available actuator thrust, the nitrogen pressure equalizes, and finally as the SGFP speed reduces due to a loss of steam after the MSIV closes. The expected maximum closure time would be less than one minute due to SGFP speed decrease. This phenomenon would act to close the valve within the appropriate time to preserve the safety function. The RTO feature should not be tested at power since it increases the risk of a feedwater transient with the plant generating power, but should normally be performed when the plant is returning to operation following a refueling outage. The testing criteria shall verify functionality of the RTO system, with SGFP pump response, by verifying that the feedwater control system sends the control signal corresponding to minimum speed to the pump upon an actual or simulated RTO signal at least once per 18 months. The functionality of the RTO system shall be verified through the performance of Instrumentation & Controls functional test procedure, "Functional Test of Reactor Trip Override, High Level Override, and Level Channel Deviation FWCS." The 18 month frequency is based on the refueling cycle, similar to testing performed per the Inservice Testing Program. This frequency is acceptable from a reliability standpoint.

←(DRN 03-1807, Ch. 30)

The testing requirements for the AFW Pump HDPT should demonstrate the ability of the pump to trip upon receiving an actual or simulated high pressure signal. The AFW Pump HPDT feature can be tested at power since the AFW pump is not required during normal operations, however, the test is normally performed when the plant is returning to operation following a refueling outage. The testing criteria shall verify functionality of the AFW Pump HDPT by (1) verifying pump trip on an actual or simulated actuation signal at least once per 18 months and (2) verifying that the delay time of Relay AFWEREL 1419-3, the most time critical element of

←(DRN 02-1684, Ch. 15)

3/4.7.1.6 MAIN FEEDWATER ISOLATION VALVES (con't)

→(DRN 02-1684, Ch. 15; 03-1807, Ch. 30)
the trip circuitry, is less than the setpoint specified in the Component Database plus the specified tolerance at least once per 18 months. The AFW pump trip shall be verified through the performance of Operations surveillance test procedure, "AFW High Discharge Pressure Trip Test." The relay delay time shall be verified through the performance of an Electrical Maintenance task document for relay AFWEREL 1419. The 18 month frequency is based on the refueling cycle, similar to testing performed per the Inservice Testing Program. This frequency is acceptable from a reliability standpoint to detect degradation.
←(DRN 02-1684, ch. 15; 03-1807, Ch. 30)

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator secondary pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitation to 115°F and 210 psig is based on a steam generator RTNDT of 40°F and is sufficient to prevent brittle fracture. Below this temperature of 115°F the system pressure must be limited to a maximum of 20% of the secondary hydrostatic test pressure of 1375 psia (corrected for instrument error). Should steam generator temperature drop below 115°F an engineering evaluation of the effects of the overpressurization is required. However, to reduce the potential for brittle failure the steam generator temperature may be increased to a limit of 200°F while performing the evaluation. The limitations on the primary side of the steam generator are bounded by the restrictions on the reactor coolant system in Specification 3.4.8.1.

3/4.7.3 COMPONENT COOLING WATER AND AUXILIARY COMPONENT COOLING WATER SYSTEMS

The OPERABILITY of the component cooling water system and its corresponding auxiliary component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of these systems, assuming a single failure, is consistent with the assumptions used in the safety analyses.