Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

May 23, 2002
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
License Amendment Request
Proposed Changes to Technical Specifications 3.7.1.5 and 3.7.1.7

Reference: Letter, S.M. Head to NRC Document Control Desk, "Response to NRC Regulatory Issue Summary 2001-21," dated January 17, 2002 (NOC-AE-02001243)

Pursuant to 10CFR50.90, STP Nuclear Operating Company (STPNOC) submits the attached proposed amendment to Operating Licenses NPF-76 and NPF-80. This license amendment request proposes to revise Technical Specification Limiting Conditions for Operation (LCO) 3.7.1.5, Main Steam Line Isolation Valves, and 3.7.1.7, Main Feedwater System.
The proposed changes would:

- extend the allowed outage time (AOT)for one inoperable main steam line isolation Valve (MSIV), when in MODE 1, from 4 hours to 8 hours
- extend the AOT for one or more inoperable main steam line isolation valve(s), when in Modes 2 and 3, from 4 hours to 8 hours.
- extend the AOT for one or more inoperable main feedwater isolation valve(s) from 4 hours to 72 hours
- allow more than one main feedwater isolation valve to be inoperable and closed.

The STPNOC Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed and approved this amendment application.

Attachment 1 to this letter provides the description and assessment of the proposed license changes. Attachment 2 provides the Technical Specification (TS) pages marked up with the proposed changes. Attachment 3 provides retyped TS pages. Attachment 4 provides TS Bases changes (provided for information only).

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STPNOC requests approval of the proposed amendment by May 1, 2003. Once approved, the amendment shall be implemented within 30 days.
This amendment request is one of the fourteen plant–specific submittals that STPNOC planned to submit in fiscal 2002 (refer to the referenced letter).

STPNOC is notifying the State of Texas of this request in accordance with 10 CFR 50.91(b).

If there are any questions regarding the proposed amendment, please contact Mr. W. R. Bealefield at (361) 972-7696 or me at (361) 972-8757.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on : 5/23/02

J. J. Sheppard
Vice President
Engineering & Technical Services

wrb/

Attachments:
1. Licensee's Evaluation
2. Proposed Technical Specification Changes (Markup)
3. Proposed Technical Specification Pages (Retyped)
4. Technical Specification Bases Changes (Information Only)

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ATTACHMENT 1

LICENSEE'S EVALUATION

1.0 INTRODUCTION

The proposed amendment will revise Technical Specifications 3.7.1.5, Main Steam Line Isolation Valves, and 3.7.1.7, Main Feedwater System, for South Texas Project Units 1 and 2.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

The proposed change would revise the Limiting Condition for Operation (LCO) 3.7.1.5 to extend the allowed time for inoperability of one Main Steam Isolation Valve (MSIV), when in mode 1 from 4 hours to 8 hours and extend the allowed time for inoperability for one or more MSIV(s) when in MODES 2 and 3 from 4 hours to 8 hours with a verification of valve closure once per 7 days.

The proposed change would also revise LCO 3.7.1.7 to extend the allowed time for inoperability of one or more main feedwater isolation valves (MFIVs) from 4 hours to 72 hours when in MODES 1 and 2 and also allow more than one MFIV to be inoperable and closed in MODE 3. The extension of allowed outage time (AOT) for the MFIV from 4 hours to 72 hours is dependent on verification within 4 hours that the main feedwater regulating valve (MFRV) in the same flow path is available to perform feedwater isolation of the affected feedwater line. A note is also added to state that separate ACTION entry is allowed for each valve. (Appropriate Bases changes are included for information only to reflect the proposed changes.)

3.0 BACKGROUND

3.1 Main Steam Isolation Valves

Specification 3.7.1.5 currently provides a 4-hour action AOT for one inoperable MSIV in the open position when in Mode 1. Additionally, when in MODES 2 and 3, the current Technical Specification requires one inoperable MSIV to be maintained closed in order for operations to continue in these MODES. The NUREG-1431, Improved Technical Specifications (ITS), Rev. 2, version of the main steam isolation valve specification provides an action AOT of 8 hours for one inoperable MSIV in MODE 1. ITS also provides an action AOT of 8 hours for one or more MSIV(s) inoperable in MODES 2 and 3 with verification the valve(s) is/are closed and verified closed once per 7 days. ITS also provides for a separate condition entry for each inoperable MSIV. The 8-hour AOT is reasonable considering the low probability of an accident occurring during this time period that would require closing the MSIV.

The main steam isolation valves isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generators. One MSIV is located in each main steam line outside, but close to, containment. The MSIVs are downstream from the main steam safety valves (MSSVs) and auxiliary feedwater (AFW) pump turbine steam supply to prevent MSSV and AFW isolation from the steam generators by MSIV closure. Closing the MSIVs isolates

each steam generator from the others, and isolates the turbine, Steam Dump System, and other auxiliary steam supplies from the steam generators. The MSIVs close on a main steam isolation signal generated by either low steam line pressure, high negative steam line pressure rate, or high containment pressure. The MSIVs fail closed on loss of control or actuation power. The MSIVs may also be actuated manually. Each MSIV has an MSIV bypass valve. Although these bypass valves are normally closed, they receive the same emergency closure signal as their associated MSIVs.

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment, discussed in the UFSAR, Section 6.2 (Ref. 2). It is also affected by the accident analysis of SLB events presented in the UFSAR, Section 15.1.5 (Ref. 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 limiting case for the containment analysis is the SLB inside containment, with a loss of offsite power following turbine trip, and failure of the MSIV on the affected steam generator to close. Due to reverse flow and failure of the MSIV to close, the additional mass and energy in the steam headers downstream from the other MSIVs contribute to the total release.

The accident analysis compares several different SLB events against different acceptance criteria. The large SLB outside containment upstream of the MSIV is limiting for offsite dose, although a break in this short section of main steam header has a very low probability. The large SLB inside containment at hot zero power is the limiting case for a post trip return to power. The large SLB inside containment at hot full power is the limiting case for peak containment temperature.

During power operation, the MSIVs serve only a safety function and remain open.. These valves operate under the following situations:

a. A HELB inside containment. In order to maximize the mass and energy release into containment, the analysis assumes that the MSIV in the affected steam generator remains open.

b. A break outside of containment and upstream from the MSIVs is not a containment pressurization concern. The uncontrolled blowdown of more than one steam generator must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the MSIVs isolates the break and limits the blowdown to a single steam generator.

c. A break downstream of the MSIVs will be isolated by the closure of the MSIVs.

d. Following a steam generator tube rupture, closure of the MSIVs isolates the ruptured steam generator from the intact steam generators to minimize radiological releases.

e. The MSIVs are also utilized during other events such as a feedwater line break. This event is less limiting so far as MSIV operability is concerned.

3.2 Main Feedwater Isolation Valves

Specification 3.7.1.7 currently provides a 4-hour action AOT for one inoperable MFIV in the open position. The NUREG-1431 (ITS) version of the main feedwater isolation valve specification provides an action completion time of 72 hours. The ITS Bases indicates that the 72-hour completion time for the MFIVs takes into account the redundancy afforded by the feedwater regulating valves and the low probability of an event occurring during this time period that would require isolation of the main feedwater flow paths. The 72-hour MFIV action AOT time is reasonable based on operating experience.

The Improved Technical Specifications allow one or more main feedwater isolation valves to be inoperable with action completion time of 72 hours. The ITS also provide for a separate entry into the action for each inoperable MFIV.

The Main Feedwater Isolation Valves isolate main feedwater flow to the secondary side of the steam generators following a high energy line break (HELB). Each MFIV has a bypass valve. The function of the Main Feedwater Regulating Valves (MFRV) and their associated bypass valves is to provide backup isolation of main feedwater flow to the secondary side of the steam generators following a HELB. The Main feedwater Regulating Valves are not full safety grade but are designed as highly reliable backups to the MFIVs. This licensing basis is reflected in Updated Final Safety Analysis Report Section 6.2.1. The NRC found this to be generically acceptable for PWRs in NUREG-0138 (Ref. 4). Closure of the MFIV and associated bypass valves or main feedwater regulating valves and associated bypass valves isolates flow to the steam generators, terminating the event for feedwater line breaks occurring upstream of the MFIVs or feedwater regulating valves. The consequences of events occurring in the main steam lines or in the main feedwater lines downstream from the MFIV will be mitigated by their closure. Closure of the MFIV and associated bypass valves, or feedwater regulating valves and associated bypass valves, effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks or feedwater line breaks inside containment, and reducing the cooldown effects for steam line breaks.

The MFIVs and associated bypass valves, and the main feedwater check valves, isolate the non-safety related portions from the safety related portions of the system. In the event of a feedwater pipe rupture in the non-safety portion of the system, the check valves will close to terminate the loss of fluid from the secondary side. In the event of a secondary side pipe rupture inside containment, the MFIVs and associated bypass valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of auxiliary feedwater (AFW) to the intact loops.

The MFIVs and associated bypass valves, and feedwater regulating valves and associated bypass valves, close on receipt of a safety injection signal, T_{avg} – Low coincident with reactor

trip or steam generator water level – high high signal. They may also be actuated manually. Each MFIV and associated bypass valve and each feedwater regulating valve and associated bypass valve is a two train valve (i.e., both Train A and Train B controls are independently provided to perform the close function). Single active failure of the MFIV and associated bypass is not assumed; however, the feedwater regulating valves and associated bypass valves are provided as a backup in the unlikely event a mechanical failure prevented the primary isolation valves from fully closing.

The GDC-4 design basis of the MFIVs is established by the analyses for large steam line break. It is also influenced by the accident analysis for large feedwater line break. Closure of the MFIVs and associated bypass valves may also be relied on to terminate a steam line break for core response analysis and excess feedwater event upon receipt of a steam generator water level – high high signal.

The current LCO ensures that the MFIVs will isolate main feedwater flow to the steam generators, following a feedwater line break. The MFRVs, while not credited to perform the nuclear safety function for these events, are nevertheless expected to be available as non-safety grade backups to the MFIVs.

4.0 TECHNICAL ANALYSIS

4.1 Main Steam Isolation Valves

The 8-hour completion time for one MSIV inoperable in MODE 1 is reasonable, considering the low probability of an accident occurring during this time period that would require closure of the MSIVs. The 8-hour completion time takes into account 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 barrier for containment isolation.

Since the MSIVs are required to be operable in MODES 2 and 3, the inoperable MSIV(s) must 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 completion time for MODES 2 and 3 is consistent with that allowed for MODE 1.

For inoperable MSIVs that are closed but cannot be restored within the specified AOT, the inoperable MSIVs must be verified to be closed on a periodic basis. This is necessary to ensure that the assumptions in the safety analysis remain valid. Based on engineering judgement, the 7-day completion time is reasonable, in view of MSIV status indications 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 4 within 12 hours. The AOTs 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.

4.2 Main Feedwater Isolation Valves

The 72-hour action completion time is reasonable, based on operating experience and the low probability of an event occurring during this time period that would require isolation of the main feedwater flow paths to the steam generators. The completion time is also consistent with the Completion Time allowed in ITS Condition C of TS 3.6.3, "Containment Isolation Valves", for one or more penetrations inoperable (applicable to penetration flow paths with only one containment isolation valve and a closed system).

In summary, the proposed increase in the action completion time for one or more MFIVs inoperable is justified based on the redundancy afforded by the feedwater regulating valves to terminate main steam line break and feedwater line break events. Allowing 72 hours to correct a MFIV problem, given credit for the feedwater regulating valves, is consistent with the ITS and could prevent an unnecessary plant transient or prevent a feedwater transient due to a less than adequate time allowed for a repair.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

STPNOC has evaluated whether the proposed amendment involves a significant hazards consideration by focusing on the three standards set forth in 10CFR50.92 as discussed below.

1) Will operation of the facility in accordance with the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed change extends the action completion time for one MSIV in Mode 1, and one or more in Mode 2 and 3, from 4 hours to 8 hours. Extending the completion time is not an accident initiator and thus does not change the probability that an accident will occur. However, it could potentially affect the consequences of an accident if an accident occurred during the extended unavailability of the inoperable MSIV. The increase in time that the MSIV is unavailable is small and the probability of an event occurring during this time period, which would require isolation of the main steam flow paths, is low.

The proposed change extends the action completion time for one or more MFIVs from 4 hours to 72 hours. Extending the completion time is not an accident initiator and thus does not change the probability that an accident will occur. However, it could potentially affect the consequences of an accident if an accident occurred during the extended unavailability of the

inoperable MFIV. The increase in time that the MFIV is unavailable is small and the probability of an event occurring during this time period, which would require isolation of the main feedwater flow paths, is low.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2) Will operation of the facility in accordance with the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

Closure of the MSIVs is required to mitigate the consequences of large Steam Line Break inside containment. The proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

Closure of the MFIVs is required to mitigate the consequences of the Main Steam Line Break and Main Feedwater Line Break accidents. The proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3) Will operation of the facility in accordance with the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed changes do not change any Technical Specification Limit or accident analysis assumption. Therefore it does not involve a reduction in a margin of safety.

Based on the above evaluations, STPNOC has determined that the proposed amendments to the operating licenses involves no significant hazards consideration under the standards set forth in 10 CFR 50.92 and accordingly, a finding by the NRC of no significant hazards consideration is justified.

5.2 Applicable Regulatory Requirements / Criteria

10CFR50, Appendix A, General Design Criteria (GDC) 4, "Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss of coolant accidents. These structures, systems, and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit. However, dynamic effects associated with postulated pipe ruptures in nuclear power units may be excluded from

the design basis when analyses reviewed and approved by the Commission demonstrate that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping."

GDC 16, "Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as the postulated accident conditions require."

GDC 50, "The reactor containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and, with sufficient margin, the calculated pressure and temperature conditions resulting from any loss–of-coolant accident. This margin shall reflect consideration of (1) the effects of potential energy sources which have not been included in the determination of the peak conditions, such as energy in steam generators and energy from metal water and other chemical reactions that may result from degraded emergency core cooling functioning, (2) the limited experience and experimental data available for defining accident phenomena and containment responses, and (3) the conservatism of the calculational model and input parameters."

GDC 53, "The reactor containment shall be designed to permit (1) appropriate periodic inspection of all important areas, such as penetrations, (2) an appropriate surveillance program, and (3) periodic testing at containment design pressure of the leaktightness of penetrations which have resilient seals and expansion bellows."

GDC 54, "Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits."

GDC 57, "Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside the containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve."

NRC Regulatory Guide (RG) 1.22 provides guidance for ensuring the adequacy of protection system actuation functions through periodic testing.

The specifications of concern help assure compliance with GDC 4, GDC 16, GDC 50, GDC 53, GDC 54, such that, in the event of a Main Feedwater Line Break or Main Steam Line Break inside containment, the containment will be appropriately isolated and additional mass and energy will be prevented from being delivered to the steam generators or the main steam piping.

6.0 ENVIRONMENTAL CONSIDERATION

STPNOC has determined that the proposed amendment would change requirements with respect to the use of a facility component located within the restricted area, as defined in 10CFR 20. However, the proposed amendment does not involve i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. NUREG-1431, Revision 2, Improved Technical Specifications, Westinghouse Plants

2. UFSAR Section 6.2, Containment Systems

3. UFSAR Section 15.1.5, Spectrum of Steam System Piping Failures Inside and Outside Containment

4. NUREG-0138, Staff Discussion of Fifteen Technical Issues listed in attachment to November 3, 1976 memorandum from Director, NRR to NRR staff

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARKUP)

PLANT SYSTEMS

MAIN FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.7 Each main feedwater isolation valve (MFIV) shall be OPERABLE.

APPLICABILITY: MODES 1~~, 2, and 3.~~
MODES 2 and 3, except when MFIV is closed and deactivated

ACTION:

~~MODES 1 and 2: With one MFIV inoperable but open, operation may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise be in HOT STANDBY within the next 6 hours.~~

~~MODE 3: With one MFIV inoperable, subsequent operation in MODE 3 may proceed provided the isolation valve is maintained closed. Otherwise, be in HOT SHUTDOWN within the next 6 hours.~~

MODES 1, 2 and 3 With one or more MFIV inoperable,* close or isolate the inoperable valve(s) within 4 hours, or verify, within 4 hours, that the main feedwater regulating valve (MFRV) in the same flow path(s) is/are available to perform feedwater isolation, and close or isolate the MFIV(s)within 72 hours, and verify the valve(s) closed every 7 days, otherwise be in MODE 3 within the next 6 hours and be in MODE 4 within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.7 Each MFIV shall be demonstrated OPERABLE by verifying full closure within 10 seconds when tested pursuant to Specification 4.0.5. The provisions of specification 4.0.4 are not applicable for entry into MODE 3.

*** Separate Limiting Condition for Operation entry is allowed for each MFIV**

PLANT SYSTEMS

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.5 Each main steam line isolation valve (MSIV) shall be OPERABLE.

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

ACTION:

MODE 1:

With one MSIV inoperable but open, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within **4 8** hours; otherwise be in ~~HOT STANDBY~~ **MODE 2** within the next 6 hours ~~and in HOT SHUTDOWN within the following 6 hours~~.

MODES 2 and 3:

With one ~~MSIV~~ **or more MSIVs*** inoperable, subsequent operation in MODE 2 or 3 may proceed provided the **inoperable** isolation valve**(s)** is**/are** ~~maintained~~ closed **within 8 hours and verified closed every 7 days**. Otherwise, be in ~~HOT STANDBY~~ **MODE 3** within the next 6 hours and in ~~HOT SHUTDOWN~~ MODE **4** within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.5 Each MSIV shall be demonstrated OPERABLE by verifying full closure within 5 seconds when tested pursuant to Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

***Separate LCO entry is allowed for each MSIV.**

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION PAGES (RETYPED)

PLANT SYSTEMS

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.5 Each main steam line isolation valve (MSIV) shall be OPERABLE.

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

ACTION:

MODE 1:

With one MSIV inoperable but open, 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 and 3:

With one or more MSIV(s) inoperable, subsequent operation in MODE 2 or 3 may proceed provided the inoperable isolation valve(s) is/are closed within 8 hours and verified closed every 7 days. Otherwise, be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.*

SURVEILLANCE REQUIREMENTS

4.7.1.5 Each MSIV shall be demonstrated OPERABLE by verifying full closure within 5 seconds when tested pursuant to Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

* Separate Limiting Condition for Operation entry is allowed for each MSIV.

PLANT SYSTEMS

MAIN FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.7 Each main feedwater isolation valve (MFIV) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 except when MFIV is closed and deactivated.

ACTION:

With one or more MFIV(s) inoperable,* close or isolate the inoperable valve(s) within 4 hours, or
Verify, within 4 hours, that the Main Feedwater Regulating Valve(s) (MFRV) in the same flow path(s) is/are available to perform feedwater isolation and
Close or isolate the MFIV(s) within 72 hours and
Verify the valve(s) closed every 7 days.
Otherwise be in MODE 3 within the next 6 hours and
Be in MODE 4 within the following 6 hours. *

SURVEILLANCE REQUIREMENTS

4.7.1.7 Each MFIV shall be demonstrated OPERABLE by verifying full closure within 10 seconds when tested pursuant to Specification 4.0.5. The provisions of specification 4.0.4 are not applicable for entry into MODE 3.

* Separate Limiting Condition for Operation entry is allowed for each MFIV.

ATTACHMENT 4

TECHNICAL SPECIFICATION BASIS CHANGE
(Information Only)

MAIN STEAM LINE ISOLATION VALVES BASES

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 Main Steam Isolation Valves (MSIVs) isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generators.

One MSIV is located in each main steam line outside, but close to, containment. The MSIVs are downstream of the main steam safety valves (MSSVs) and auxiliary feedwater (AFW) pump turbine steam supply, to prevent MSSV and AFW isolation from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the others, and isolates the turbine, Steam Dump System, and other auxiliary steam supplies from the steam generators.

The MSIVs close on a main stem isolation signal generated by either, low steam line pressure, high negative steam line pressure rate, or high containment pressure. The MSIVs fail closed on loss of control or actuation power. The MSIVs may also be actuated manually.

Each MSIV has an MSIV bypass valve. Although these bypass valves are normally closed, they receive the same emergency closure signal, as do their associated MSIVs.

A description of the MSIVs is found in the UFSAR, Section 10.3.2.

Feedwater Isolation Valves Bases

The OPERABILITY of the feedwater isolation valves ensures that no more than one steam generator will blow down in the event of a steam line or feedwater line rupture. The operability of the Feedwater Isolation valves will minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and limit the pressure rise within containment. The OPERABILITY of the feedwater isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analysis.

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). The safety related function of the Main feedwater Regulating Valves (MFRVs) is to provide backup isolation capability of MFW flow to the secondary side of the steam generators following a HELB. Closure of the MFIVs and associated bypass valves (including the preheater bypass valves or MFRVs and associated bypass valves terminates flow to the steam generators, terminating the event for feedwater line breaks (FWLBs) occurring upstream of the MFIVs or MFRVs. The consequences of events occurring in the main steam lines or in the MFW lines downstream of the MFIVs will be mitigated by their closure. Closure of the MFIVs and associated bypass valves, or MFRVs and associated bypass valves, effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) or FWLBs inside containment, and reducing the cooldown effects for SLBs.

The MFIVs and associated bypass valves, or MFRVs and associated bypass valves, isolate the non-safety related portions from the safety related portions of the system. In the event of a secondary side pipe rupture inside containment, the valves limit the quantity of high energy feedwater fluid that enters containment through the break.

One MFIV and associated bypass valve, and one MFRV and its associated bypass valve are located on each MFW line, outside but close to containment.

The MFIVs and associated bypass valves, and MFRVs and associated bypass valves, close on receipt of a T_{avg} – Low coincident with reactor trip (P-4), steam generator water level – high high, or safety injection signal. They may also be actuated manually. In addition to the MFIVs and associated bypass valves, and the MFRVs and associated bypass valves, a check valve is available downstream. The check valves closes to prevent blowdown of the generators until the MFIVs or MFRVs can be closed in the event of a main feedwater line break occurring upstream of the check valve.

A description of the MFIVs and MFRVs is found in the UFSAR, Section 10.4.7