Advanced Passive 1000 (AP1000)
Generic Technical Specification Traveler (GTST)

Title: Changes Related to LCO 3.7.1, Main Steam Safety Valves (MSSVs)

I. Technical Specifications Task Force (TSTF) Travelers, Approved Since Revision 2 of STS NUREG-1431, and Used to Develop this GTST

TSTF Number and Title:

TSTF-479-A, Rev 0, Changes to Reflect Revision of 10 CFR 50.55a

STS NUREGs Affected:

TSTF-479-A, Rev 0: NUREGs 1430, 1431, 1432, 1433, and 1434

NRC Approval Date:

TSTF-479-A, Rev 0: 06-Dec-05

TSTF Classification:

TSTF-479-A, Rev 0: Technical Change

II. Reference Combined License (RCOL) Standard Departures (Std. Dep.), RCOL COL Items, and RCOL Plant-Specific Technical Specifications (PTS) Changes Used to Develop this GTST

RCOL Std. Dep. Number and Title:

There are no Vogtle departures applicable to Specification 3.7.1.

RCOL COL Item Number and Title:

There are no Vogtle COL items applicable to Specification 3.7.1.

RCOL PTS Change Number and Title:

VEGP LAR DOC A003:	References to various Chapters and Sections of the Final Safety Analysis Report (FSAR) are revised to include FSAR.
VEGP LAR DOC A091:	Minimum required MSSVs to be Operable when at 100% RTP
VEGP LAR DOC A092:	TS 3.7.1, Action B and SR 3.7.1.1 Editorial Changes
VEGP LAR DOC A093:	SR 3.7.1.1 deletion of statement that following testing the lift settings shall be within + 1%
VEGP LAR DOC M11:	Containment valve isolation revisions to TS 3.7.1

III. Comments on Relations Among TSTFs, RCOL Std. Dep., RCOL COL Items, and RCOL PTS Changes

This section discusses the considered changes that are: (1) applicable to operating reactor designs, but not to the AP1000 design; (2) already incorporated in the GTS; or (3) superseded by another change.

TSTF-479-A has been applied to AP1000 GTS 3.7.1, Rev 19 by Westinghouse. TSTF-479-A will not be discussed further as a part of this GTST.

IV. Additional Changes Proposed as Part of this GTST (modifications proposed by NRC staff and/or clear editorial changes or deviations identified by preparer of GTST)

GTS Table 3.7.1-2 utilizes headers that span multiple data columns. The database requires single-column headers. Therefore, table 3.7.1-2 has been reformatted with single column headers. All information from headers that spanned multiple columns has been incorporated into each individual column. As such, the revised Table 3.7.1-2 is equivalent to GTS 3.7.1 Table 3.7.1-2.

Added appropriate references. Adjusted the listed reference order to reflect the order of their initial appearance.

APOG Recommended Changes to Improve the Bases

Throughout the Bases, references to Sections and Chapters of the FSAR do not include the “FSAR” clarifier. Since these Section and Chapter references are to an external document, it is appropriate to include the “FSAR” modifier. (DOC A003)

V. Applicability

Affected Generic Technical Specifications and Bases:

Section 3.7.1, Main Steam Safety Valves (MSSVs)

Changes to the Generic Technical Specifications and Bases:

LCO 3.7.1 specification is revised to clearly state the number of MSSVs required and eliminate reference to Table 3.7.1-1 and Table 3.7.1-2. The corresponding bases are updated. This change provides clarity. (DOC A091)

LCO 3.7.1 Applicability statement is modified to include MODE 4 and a Note is added regarding the requirements in MODE 4. This is consistent with TS 3.6.3. (DOC M11)

GTS 3.7.1 condition A statement is modified to provide clarity and consistency with GTS 3.6.3. (DOC A091 and DOC M11)

A new STS 3.7.1 Condition B and Required Action B.1 are added. This is consistent with GTS 3.6.3. (DOC M11)

The former GTS 3.7.1 Condition B is relabeled as STS 3.7.1 Condition C and the Condition statement is modified to provide clarity and consistency with GTS 3.6.3. (DOC A092 and DOC M11)

A new STS 3.7.1 Condition D and Required Actions D.1 and D.2 are added. This is consistent with GTS 3.6.3. (DOC M11)

The statement for SR 3.7.1.1 is revised to provide clarity and reduce redundancy. (DOC A092 and DOC A093)

The acronym “FSAR” is added to modify “Section” and “Chapter” in references to the FSAR throughout the Bases. (DOC A003) (APOG Comment)

VI. Traveler Information

Description of TSTF changes:

Not Applicable

Rationale for TSTF changes:

Not Applicable

Description of changes in RCOL Std. Dep., RCOL COL Item(s), and RCOL PTS Changes:

DOC A091 revises the GTS LCO 3.7.1 Specification to clearly state “Six MSSVs per steam generator shall be OPERABLE.” Condition A has been modified to be consistent with the LCO statement.

DOC A092 revises the GTS 3.7.1 Condition B statement “One or more steam generators...” to “One or both steam generators...” In addition, the modifier “required” is removed from the SR 3.7.1.1 statement.

DOC A093 further modifies the SR 3.7.1.1 statement by deleting the specific requirement that “following testing the lift settings shall be within + 1%.”

DOC M11 revises the LCO MODE Applicability. A new Applicability Note is added, stating “The MSSVs are not required to be OPERABLE for opening in MODE 4 when the Reactor Coolant System (RCS) is being cooled by the Normal Residual Heat removal System (RNS).” GTS 3.7.1 Condition A is revised. A new STS 3.7.1 Action B is added. GTS 3.7.1 Condition B and associated Required Actions are renumbered as STS 3.7.1 Action C. A new STS 3.7.1 Action D is added.

A more detailed description of each DOC can be found in Reference 2, VEGP TSU LAR Enclosure 1, and the NRC staff safety evaluation can be found in Reference 3, VEGP LAR SER. The VEGP TSU LAR was modified in response to NRC staff RAIs in Reference 5 and the Southern Nuclear Operating Company RAI Response in Reference 6.

Rationale for changes in RCOL Std. Dep., RCOL COL Item(s), and RCOL PTS Changes:

DOC A091 provides clarity for requirements that are otherwise implied by Table 3.7.1-1.

DOC A092 is consistent with the TS Writer's Guide (Reference 4).

DOC A093 deletes a redundant phrase.

DOC M11 provides closed system containment isolation valve requirements that are either consistent with or more restrictive than those in GTS 3.6.3.

Description of additional changes proposed by NRC staff/preparer of GTST:

Adjusted the reference order to reflect the order of their first appearance.

The acronym “FSAR” is added to modify “Section” and “Chapter” in references to the FSAR throughout the Bases. (DOC A003) (APOG Comment)

Rationale for additional changes proposed by NRC staff/preparer of GTST:

Since Bases references to FSAR Sections and Chapters are to an external document, it is appropriate to include the “FSAR” modifier.

VII. GTST Safety Evaluation

Technical Analysis:

DOC A091 revises the TS LCO 3.7.1 Specification to clearly state “Six MSSVs per steam generator shall be OPERABLE.” Condition A has been modified to be consistent with the LCO statement. There are six MSSVs per steam generator, and all six are required to be Operable at 100% RTP to meet the accident analysis assumptions. GTS Table 3.7.1-1 implies this requirement, since the first entry is that a maximum power level of 60% is allowed when only 5 MSSVs for any steam generator are Operable. However, since the GTS LCO states that Table 3.7.1-1 provides the Operability requirements, it could be misinterpreted that if one of the six MSSVs per steam generator becomes inoperable, once reactor power is reduced to 60% RTP, the LCO is being met and GTS Required Action A.2 (which requires the RPS Power Range Neutron Flux – High setpoint to be reduced) would not have to be completed. To ensure a positive statement is made as to the minimum MSSVs required to be Operable at 100% RTP and to ensure Required Action A.2 is taken when one or more MSSVs per steam generator are inoperable while in Mode 1, the LCO statement has been changed to state that six is the required number of MSSVs. Thus, any time one or both steam generators has one or more MSSVs inoperable, the LCO will not be met and, as a minimum, Condition A will have to be entered and not exited until all MSSVs for both steam generators are Operable. Furthermore, since Table 3.7.1-1 does not specify the maximum full power allowed with 6 MSSVS Operable, and GTS Required Actions A.1 and A.2 adequately reference using Table 3.7.1-1 if one or more of the MSSVs are inoperable; there is no reason to include this Table in the LCO statement. Also, since GTS SR 3.7.1.1 includes the reference to the lift settings provided in TS Table 3.7.1-2, it is not necessary to include a reference to this Table in the LCO statement. Therefore, the proposed LCO statement is equivalent to the GTS LCO 3.7.1 statement. The proposed LCO statement is also consistent with the LCO statement in NUREG-1431.

In addition, Condition A has been modified to state, in part, “One or both steam generators with one or more MSSVs inoperable.” The Condition clearly states it is applicable for one or both steam generators (the design includes only two steam generators) and is for when one or more MSSVs on a steam generator are inoperable. This proposed Condition is equivalent to the GTS Condition A.

DOC A092 revises the GTS 3.7.1 Condition B statement “One or more steam generators...” to “One or both steam generators...” The design includes only two steam generators. Therefore, for clarity, the words “or more” are changed to “or both” in this Condition.

In addition, the modifier “required” is removed from the SR 3.7.1.1 statement. The design includes six MSSVs, and all of MSSVs are required to meet the LCO. The term “required” is used only when the LCO requires some portion of the possible components be used to meet the LCO requirements. Since all six installed MSSVs are required to meet the LCO, the term “required” in the SR is not necessary and has been deleted.

DOC A093 deletes the specific statement that “following testing the lift settings shall be within + 1%” from SR 3.7.1.1. TS Table 3.7.1-2 provides the lift setting for the MSSVs. The header for the Lift Setting column identifies that the unit for the column is psig, and also states that the lift settings are + 1% of the value shown for each MSSV. Therefore, a statement that following testing the lift settings shall be + 1% is redundant to the Table requirements and is not necessary to be included in the SR. The statement in the Surveillance that the lift setting must be verified per Table 3.7.1-2 is sufficient to ensure the lift setting is within + 1% of the value in the Table.

DOC M11 revises the LCO MODE Applicability. A new Applicability Note is added, stating “The MSSVs are not required to be OPERABLE for opening in MODE 4 when the Reactor Coolant System (RCS) is being cooled by the Normal Residual Heat removal System (RNS).’ GTS 3.7.1 Condition A is revised to address opening an MSSV. A new STS 3.7.1 Action B must likewise be added to address closing an MSSV. GTS 3.7.1 Condition B and associated Required Actions are subsequently relabeled as Action C. A new STS 3.7.1 Action D is added to provide an exit from the LCO applicability.

GTS 3.6.3 provides the requirement for the containment isolation valve function. Some of the valves that are containment isolation valves are also required to be Operable to meet other safety related functions, and these requirements are provided in separate LCOs. Thus, for certain containment isolation valves on closed systems, the same valve has two separate GTS that cover its requirements. GTS 3.7.1 provides requirements for MSSVs, GTS 3.7.2 provides requirements for the MSIVs, GTS 3.7.3 provides requirements for the MFIVs, GTS 3.7.7 provides requirements for the startup feedwater isolation valves, and GTS 3.7.10 provides requirements for the power operated relief valve (PORV) block valves and SG blowdown isolation valves.

In lieu of including these valves in both GTS 3.6.3 and their individual Specification, GTS 3.6.3 is revised to exclude all closed system containment isolation valves. The remaining closed system containment isolation valves that are not covered by GTS 3.7.1, GTS 3.7.2, GTS 3.7.3, GTS 3.7.7, and GTS 3.7.10, are MSIV bypass valves and the main steam line drain valves. The requirements for these containment isolation valves are added to the STS 3.7.2 with the other steam line flow path isolation valves. All of the moved containment isolation valves are associated with a closed system and they are the only closed system containment isolation valves. The individual Specifications where these valves are moved to include the same or more restrictive requirements as currently in GTS 3.6.3, or have been revised to include the requirements from GTS 3.6.3.

GTS 3.7.1 includes the MSSV opening function, but not the containment isolation function. STS 3.7.1 includes all the requirements for the MSSVs, both the opening and the closing requirements.

The Applicability of GTS 3.7.1, which is MODES 1, 2, and 3, and MODE 4 with the Reactor Coolant System (RCS) not being cooled by the Normal Residual Heat Removal System (RNS), is revised to be consistent with the Applicability of GTS 3.6.3, which is MODES 1, 2, 3, and 4. GTS 3.7.1 Applicability is revised by a Note, which states that the MSSVs are not required to be OPERABLE for opening in MODE 4 when the RCS is being cooled by the RNS. This maintains the Applicability for the opening function of the MSSVs unchanged from the GTS 3.7.1 requirements. Therefore, the Applicability change reflects no technical change for either the moved containment isolation function or the GTS MSSV relief function.

STS 3.7.1 Action B provides a Condition when one or both MSSVs are inoperable for closing. STS 3.7.1 Required Action B.1 requires restoration of the inoperable MSSV within 72 hours. For the same issue (MSSV inoperable for closing) GTS 3.6.3 Condition C would apply, since the MSSVs are closed system valves with only one valve in the penetration flow path. GTS 3.6.3 Required Action C.1 requires the affected penetration flow path to be isolated by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange within 72 hours. GTS 3.6.3 Required Action C.2 then requires a periodic verification that the penetration remains isolated. However, the MSSVs do not include any other valve in the flow path that can be used to isolate the penetration. Thus, the only option when an MSSV will not close is to restore the MSSV to OPERABLE status within the same 72 hour period. This option is always an option in the TS (and GTS 3.6.3 Action C), whether explicitly stated or not. STS 3.7.1

Required Action B.1 is therefore functionally equivalent to GTS 3.6.3 Required Action C.1. As such, this change to include a restoration Required Action in lieu of a Required Action to isolate the affected penetration reflects no technical change for this moved MSSV containment isolation function. If an inoperable method for closing MSSV is not restored to Operable status with 72 hours, STS 3.7.1 ACTION D would apply. STS 3.7.1 Required Action D.1 requires the unit to be placed in MODE 3 within 6 hours and proposed Required Action D.2 requires the unit to be placed in MODE 5 within 36 hours. These proposed Required Actions are the same as those in GTS 3.6.3 Action D. In addition, since the affected penetration flow path cannot be isolated, GTS 3.6.3 Note 1 cannot be applied, thus it is not being added to STS 3.7.1. GTS 3.7.1 Actions Note allows separate Condition entry for each MSSV. This Note is consistent with GTS 3.6.3 Actions Note 2, which allows separate Condition entry for each penetration flow path. Each MSSV is in a separate penetration flow path, thus each separate Condition entry into GTS 3.6.3 Condition C is allowed. GTS 3.7.1 Actions Note would continue to allow this for entry into STS 3.7.1 Condition B. In addition, GTS 3.6.3 Actions Notes 3 and 4 do not apply to the MSSVs. These Notes ensure appropriate Actions are entered for any impacted supported system and GTS 3.6.1, “Containment,” Actions are entered when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria. Since MSSVs do not support any other TS required system and these valves have no associated containment leakage rate limit, GTS 3.6.3 Actions Notes 3 and 4 have no bearing on these valves. Due to the STS 3.7.1 Actions, revised TS 3.7.1 Conditions A and C have been modified to reflect that they apply only to the opening requirements for the MSSVs.

None of the SRs in GTS 3.6.3 apply to the MSSVs. The TS do not provide any Surveillance Requirements to verify the position of relief valves or check valves in GTS 3.6.3. Therefore, no Surveillances have been moved to STS 3.7.1.

The remaining changes are editorial, clarifying, grammatical, or otherwise considered administrative. These changes do not affect the technical content, but improve the readability, implementation, and understanding of the requirements, and are therefore acceptable.

Having found that this GTST’s proposed changes to the GTS and Bases are acceptable, the NRC staff concludes that AP1000 STS Subsection 3.7.1 is an acceptable model Specification for the AP1000 standard reactor design.

References to Previous NRC Safety Evaluation Reports (SERs):

None

VIII. Review Information

Evaluator Comments:

None

Randy Belles
Oak Ridge National Laboratory
865-574-0388
bellesrj@ornl.gov

Review Information:

Availability for public review and comment on Revision 0 of this traveler approved by NRC staff on 5/19/2014.

APOG Comments (Ref. 7) and Resolutions:

1. (Internal # 3) Throughout the Bases, references to Sections and Chapters of the FSAR do not include the “FSAR” clarifier. Since these Section and Chapter references are to an external document, it is appropriate (DOC A003) to include the “FSAR” modifier. This is resolved by adding the FSAR modifier as appropriate.

2. (Internal # 6) The GTST sections often repeat VEGP LAR DOCs, which reference “existing” and “current” requirements. The inclusion in the GTST of references to “existing” and “current,” are not always valid in the context of the GTS. Each occurrence of “existing” and “current” should be revised to be clear and specific to GTS, MTS, or VEGP COL TS (or other), as appropriate. Noted ambiguities are corrected in the GTST body.

3. (Internal # 7) Section VII, GTST Safety Evaluation, inconsistently completes the subsection “References to Previous NRC Safety Evaluation Reports (SERs)” by citing the associated SE for VEGP 3&4 COL Amendment 13. It is not clear whether there is a substantive intended difference when omitting the SE citation. This is resolved by removing the SE citation in Section VII of the GTST and ensuring that appropriate references to the consistent citation of this reference in Section X of the GTST are made.

4. (Internal # 384) In GTST for Subsection 3.7.1, Section V, under the heading “Changes to GTS and Bases”, the fifth paragraph discusses the former GTS Condition B and states that the change is associated with DOC A091. It is really associated with DOC A092. Change “A091” to “A092.” This is resolved by making the recommended change.

NRC Final Approval Date: 12/8/2015

NRC Contact:

T. R. Tjader
United States Nuclear Regulatory Commission
301-415-1187
Theodore.Tjader@nrc.gov

IX. Evaluator Comments for Consideration in Finalizing Technical Specifications and Bases

None

X. References Used in GTST

1. AP1000 DCD, Revision 19, Section 16, “Technical Specifications,” June 2011 (ML11171A500).

2. Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Units 3 and 4, Technical Specifications Upgrade License Amendment Request, February 24, 2011 (ML12065A057).

3. NRC Safety Evaluation (SE) for Amendment No. 13 to Combined License (COL) No. NPF-91 for Vogtle Electric Generating Plant (VEGP) Unit 3, and Amendment No. 13 to COL No. NPF-92 for VEGP Unit 4, September 9, 2013, ADAMS Package Accession No. ML13238A337, which contains:

ML13238A355	Cover Letter - Issuance of License Amendment No. 13 for Vogtle Units 3 and 4 (LAR 12-002).
ML13238A359	Enclosure 1 - Amendment No. 13 to COL No. NPF-91
ML13239A256	Enclosure 2 - Amendment No. 13 to COL No. NPF-92
ML13239A284	Enclosure 3 - Revised plant-specific TS pages (Attachment to Amendment No. 13)
ML13239A287	Enclosure 4 - Safety Evaluation (SE), and Attachment 1 - Acronyms
ML13239A288	SE Attachment 2 - Table A - Administrative Changes
ML13239A319	SE Attachment 3 - Table M - More Restrictive Changes
ML13239A333	SE Attachment 4 - Table R - Relocated Specifications
ML13239A331	SE Attachment 5 - Table D - Detail Removed Changes
ML13239A316	SE Attachment 6 - Table L - Less Restrictive Changes

   The following documents were subsequently issued to correct an administrative error in Enclosure 3:

ML13277A616	Letter - Correction To The Attachment (Replacement Pages) - Vogtle Electric Generating Plant Units 3 and 4-Issuance of Amendment Re: Technical Specifications Upgrade (LAR 12-002) (TAC No. RP9402)
ML13277A637	Enclosure 3 - Revised plant-specific TS pages (Attachment to Amendment No. 13) (corrected)

4. TSTF-GG-05-01, “Writer's Guide for Plant-Specific Improved Technical Specifications,” June 2005.

5. RAI Letter No. 01 Related to License Amendment Request (LAR) 12-002 for the Vogtle Electric Generating Plant Units 3 and 4 Combined Licenses, September 7, 2012 (ML12251A355).

6. Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Units 3 and 4, Response to Request for Additional Information Letter No. 01 Related to License Amendment Request LAR-12-002, ND-12-2015, October 04, 2012 (ML12286A363 and ML12286A360)

7. APOG-2014-008, APOG (AP1000 Utilities) Comments on AP1000 Standardized Technical Specifications (STS) Generic Technical Specification Travelers (GTSTs), Docket ID NRC-2014-0147, September 22, 2014 (ML14265A493).

XI. MARKUP of the Applicable GTS Subsection for Preparation of the STS NUREG

The entire section of the Specifications and the Bases associated with this GTST is presented next.

Changes to the Specifications and Bases are denoted as follows: Deleted portions are marked in strikethrough red font, and inserted portions in bold blue font.

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 **Six** ~~The~~ MSSVs **per steam generator** shall be OPERABLE~~ as specified in Table 3.7.1-1 and Table 3.7.1-2~~.

APPLICABILITY: MODES 1, 2, ~~and~~ 3**, and 4**.
~~MODE 4 with the Reactor Coolant System (RCS) not being cooled by the Normal Residual Heat Removal System (RNS).~~

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each MSSV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or **both steam generators with one or more** ~~more required~~ MSSVs inoperable **for opening**.	A.1 Reduce THERMAL POWER to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs. AND	4 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 ----------NOTE---------- Only required in MODE 1. ---------- Reduce the Power Range Neutron Flux - High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.	36 hours
B. One or both steam generators with one or more MSSVs inoperable for closing.	**B.1 Restore MSSV to OPERABLE status.**	**72 hours**
C~~B~~. Required Action and associated Completion Time **of Condition A** not met. OR One or **both** ~~more~~ steam generators with ≥ 5 MSSVs inoperable **for opening**.	**C~~B~~.1** Be in MODE 3. AND **C~~B~~.2** Be in MODE 4 with the RCS cooling provided by the RNS.	6 hours 24 hours
D. Required Action and associated Completion Time of Condition B not met.	**D.1 Be in MODE 3.** **AND** **D.2 Be in MODE 5.**	**6 hours** **36 hours**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each ~~required~~ MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. ~~Following testing, lift settings shall be within ±1%.~~	In accordance with the Inservice Testing Program

Table 3.7.1-1 (page 1 of 1)
OPERABLE MSSVs versus Maximum Allowable Power

NUMBER OF OPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM ALLOWABLE POWER (% RTP)
5	60
4	46
3	32
2	18

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

VALVE NUMBER STEAM GENERATOR #1	VALVE NUMBER STEAM GENERATOR #2	LIFT SETTING (PSIG ± 1%)
V030A	V030B	1185
V031A	V031B	1197
V032A	V032B	1209
V033A	V033B	1221
V034A	V034B	1232
V035A	V035B	1232

B 3.7 PLANT SYSTEMS

B 3.7.1 Main Steam Safety Valves (MSSVs)

BASES

BACKGROUND

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing a heat sink for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available. **The MSSVs also are containment isolation valves.**

Six MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in Reference 1. The MSSVs must have sufficient capacity to limit the secondary system pressure to ≤ 110% of the steam generator design pressure in order to meet the requirements of the ASME Code, Section III (Ref. 2). The MSSV design includes staggered setpoints, as shown in Table 3.7.1-2 of the specification, so that only the needed valves actuate. Staggered setpoints reduce the potential for valve chattering that is due to steam pressure insufficient to fully open the valves following a turbine-reactor trip.

APPLICABLE SAFETY ANALYSES

The design basis for the MSSVs comes from Reference 2 and its purpose is to limit the secondary system pressure to ≤ 110% of design pressure for any anticipated operating occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

The events that challenge the relieving capacity of the MSSVs, are those characterized as decreased heat removal events, which are presented in **FSAR** Section 15.2 (Ref. 3). Of these, the full power turbine trip without turbine bypass is the limiting AOO. This event also terminates normal feedwater flow to the steam generators.

The safety analysis demonstrates that the transient response for turbine trip without a direct reactor trip presents no hazard to the integrity of the RCS or the Main Steam System. One turbine trip analysis is performed assuming primary system pressure control via operation of the pressurizer spray. This analysis demonstrates that the **departure from nucleate boiling (**DNB**)** design basis is met. Another analysis is performed assuming no primary system pressure control, but crediting reactor trip on high pressurizer pressure and operation of the pressurizer

APPLICABLE SAFETY ANALYSES (continued)

safety valves. This analysis demonstrates that RCS integrity is maintained by showing that the maximum RCS pressure does not exceed 110% of the design pressure.

All cases analyzed demonstrate that the MSSVs maintain Main Steam System integrity by limiting the maximum steam pressure to less than 110% of the steam generator design pressure.

In addition to the decreased heat removal events, reactivity insertion events may also challenge the relieving capacity of the MSSVs. The uncontrolled rod cluster control assembly (RCCA) bank withdrawal at power event is characterized by an increase in core power and steam generation rate until reactor trip occurs when either the Overtemperature ΔT or Power Range Neutron Flux-High setpoint is reached. Steam flow to the turbine will not increase from its initial value for this event. The increased heat transfer to the secondary side causes an increase in steam pressure and may result in opening of the MSSVs prior to reactor trip, assuming no credit for operation of the atmospheric or condenser steam dump valves. The **FSAR** ~~DCD~~ Section 15.4.2 safety analysis of the RCCA bank withdrawal at power event for a range of initial core power levels demonstrates that the MSSVs are capable of preventing secondary side overpressurization for this AOO **(Ref. 4)**.

The **FSAR** ~~DCD~~ safety analyses discussed above assume that all of the MSSVs for each steam generator are OPERABLE. If there are inoperable MSSV(s), it is necessary to limit the primary system power during steady state operation and AOOs to a value that does not result in exceeding the combined steam flow capacity of the turbine (if available) and the remaining OPERABLE MSSVs. The required limitation on primary system power necessary to prevent secondary system overpressurization may be determined by system transient analyses or conservatively arrived at by a simple heat balance calculation. In some circumstances it is necessary to limit the primary side heat generation that can be achieved during an AOO by reducing the setpoint of the Power Range Neutron Flux-High reactor trip function. For example, if more than one MSSV on a single steam generator is inoperable, an uncontrolled RCCA bank withdrawal at power event occurring from a partial power level may result in an increase in reactor power that exceeds the combined steam flow capacity of the turbine and the remaining OPERABLE MSSVs. Thus, for multiple inoperable MSSVs on the same steam generator it is necessary to prevent this power increase

BASES

APPLICABLE SAFETY ANALYSES (continued)

by lowering the Power Range Neutron Flux-High setpoint to an appropriate value.

In addition, the MSSVs are containment isolation valves and support the assumptions related to minimizing the loss of inventory and establishing the containment boundary during major accidents. Therefore, the safety analysis of any event requiring isolation of containment is applicable to the MSSVs.

The MSSVs are assumed to have two active and one passive failure modes. The active failure modes are spurious opening, and failure to reclose once opened. The passive failure mode is failure to open upon demand.

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

LCO

The accident analysis requires six MSSVs per steam generator to provide overpressure protection for design basis transients occurring at 102% of RTP. A MSSV will be considered inoperable if it fails to open in the event of a pressure excursion in excess of the setpoint. The LCO requires that six MSSVs be OPERABLE in compliance with Reference 2. Operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet ASME Code requirements). These limitations are according to Table 3.7.1-1 of the specification and Required Action A.1.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseat when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Program **(Ref. 5)**.

The lift settings specified in Table 3.7.1-2 in the accompanying LCO, correspond to ambient conditions of the valve at nominal operating temperature and pressure.

This LCO provides assurance that the MSSVs will perform their designed safety functions to mitigate the consequences of accidents that could result in a challenge to the RCPB or Main Steam System integrity.

BASES

APPLICABILITY

In MODE 1, 2, 3, or 4 ~~(without the normal residual heat removal system in service)~~, six MSSVs per steam generator are required to be OPERABLE. **However, as stated in the Note to the Applicability, the MSSVs are not required to be OPERABLE for opening in MODE 4 when the Reactor Coolant System (RCS) is being cooled by the Normal Residual Heat Removal System (RNS).**

In MODE~~S~~ 4 ~~(~~with the **RNS** ~~normal residual heat removal system~~ in service~~) and 5~~, there are no credible transients requiring the MSSVs **to be opened**. The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized. **Thus, there** ~~There~~ is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each MSSV.

A.1 and A.2

With one or **both steam generators with one or** more MSSVs inoperable **for opening**, reduce power so that the available MSSV relieving capacity meets Reference 2 requirements for the applicable THERMAL POWER.

Operation with less than all six MSSVs OPERABLE **for opening** for each steam generator is permissible, if THERMAL POWER is proportionally limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the most limiting steam generator is not greater than the available relief capacity in that steam generator. The maximum THERMAL POWER corresponding to the heat removal capacity of the remaining OPERABLE MSSVs is determined via a conservative heat balance calculation as described **below and** in the attachment to Reference 6, with an appropriate allowance for calorimetric power uncertainty.

To determine the maximum THERMAL POWER corresponding to the heat removal capacity of the remaining OPERABLE MSSVs, the governing heat transfer relationship is the equation $q = (dm/dt)\,\Delta h$, where q is the heat input from the primary side, dm/dt is the mass flow rate of the steam, and Δh is the increase in enthalpy that occurs in converting the secondary side water to steam. If it is conservatively assumed that the secondary side water is all saturated liquid (i.e., no subcooled

ACTIONS (continued)

feedwater), then the Δh is the heat of vaporization (h_{fg}) at the steam relief pressure. The following equation is used to determine the maximum allowable power level for continued operation with inoperable MSSVs.

Maximum NSSS Power ≤ (100/Q) (w_s h_{fg} N) / K

where:

Q = Nominal NSSS power rating of the plant (including reactor coolant pump heat), MWt

K = Conversion factor, 947.82 (Btu/sec)/MWt

w_s = Minimum total steam flow rate capability of the OPERABLE MSSVs on any one steam generator at the highest OPERABLE MSSV opening pressure, including tolerance and accumulation as appropriate, lbm/sec

h_{fg} = Heat of vaporization at the highest MSSV opening pressure, including tolerance and accumulation as appropriate, Btu/lbm

N = Number of steam generators in the plant

To determine the Table 3.7.1-1 Maximum Allowable Power, the Maximum NSSS Power calculated using the equation above is reduced by 9% RTP to account for Nuclear Instrument System trip channel uncertainties.

The allowed Completion Times are reasonable based on operating experience to accomplish the Required Actions in an orderly manner without challenging unit systems.

B.1

With one or both steam generators with one or more MSSVs inoperable for closing, the inoperable MSSV must be restored to OPERABLE status within 72 hours. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4.

BASES

ACTIONS (continued)

C~~B~~.1 and **C**~~B~~.2

If any Required Action and associated Completion Time of Condition A is not met ~~If the MSSVs cannot be restored to OPERABLE status within the associated Completion Time~~, or if one or **both** ~~more~~ steam generators have less than two MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours, and in MODE 4, with RCS cooling provided by the ~~Normal Residual Heat Removal System (~~RNS~~)~~, within 24 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.

D.1 and D.2

If the Required Action and associated Completion Time of Condition B is not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoint in accordance with the Inservice Testing Program. The safety and relief valve tests are required to be performed in accordance with ASME OM Code (Ref**s**. 5 **and 7**). According to Reference 5, the following tests are required:

a. Visual examination;

b. Seat tightness determination;

c. Set pressure determination (lift setting);

BASES

SURVEILLANCE REQUIREMENTS (continued)

d. Compliance with owner's seat tightness criteria; and

e. Verification of the balancing device integrity on balanced valves.

The ANSI/ASME standard requires that all valves be tested every 5 years and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a ±1% setpoint tolerance for OPERABILITY, and the valves are reset to remain within ±1% during the Surveillance to allow for drift. The lift settings, according to Table 3.7.1-2, correspond to ambient conditions of the valve at nominal operating temperature and pressure.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

REFERENCES

1. **FSAR** Chapter 10, "Steam and Power Conversion Systems Description."

2. ASME Boiler and Pressure Vessel Code, Section III, Article NC-7000, "Overpressure Protection," Class 2 Components.

3. **FSAR** Section 15.2, "Decreased Heat Removal by Secondary System."

4. FSAR Section 15.4.2, "Uncontrolled Rod Cluster Control Assembly Bank Withdrawal at Power."

5~~4~~. ASME OM Code, Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants."

~~5. ASME OM Code, "Code for Operation and Maintenance of Nuclear Power Plants."~~

6. NRC Information Notice 94-60, "Potential Overpressurization of the Main Steam System," August 22, 1994.

BASES

REFERENCES (continued)

7. **ASME OM Code, "Code for Operation and Maintenance of Nuclear Power Plants."**

XII. Applicable STS Subsection After Incorporation of this GTST's Modifications

The entire subsection of the Specifications and the Bases associated with this GTST, following incorporation of the modifications, is presented next.

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 Six MSSVs per steam generator shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each MSSV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both steam generators with one or more MSSVs inoperable for opening.	A.1 Reduce THERMAL POWER to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs. AND	4 hours
	A.2 ----------NOTE---------- Only required in MODE 1. ---------- Reduce the Power Range Neutron Flux - High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or both steam generators with one or more MSSVs inoperable for closing.	B.1 Restore MSSV to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition A not met. OR One or both steam generators with ≥ 5 MSSVs inoperable for opening.	C.1 Be in MODE 3. AND C.2 Be in MODE 4 with the RCS cooling provided by the RNS.	6 hours 24 hours
D. Required Action and associated Completion Time of Condition B not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program

Table 3.7.1-1 (page 1 of 1)
OPERABLE MSSVs versus Maximum Allowable Power

NUMBER OF OPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM ALLOWABLE POWER (% RTP)
5	60
4	46
3	32
2	18

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

VALVE NUMBER STEAM GENERATOR #1	VALVE NUMBER STEAM GENERATOR #2	LIFT SETTING (PSIG ± 1%)
V030A	V030B	1185
V031A	V031B	1197
V032A	V032B	1209
V033A	V033B	1221
V034A	V034B	1232
V035A	V035B	1232

B 3.7 PLANT SYSTEMS

B 3.7.1 Main Steam Safety Valves (MSSVs)

BASES

BACKGROUND

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing a heat sink for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available. The MSSVs also are containment isolation valves.

Six MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in Reference 1. The MSSVs must have sufficient capacity to limit the secondary system pressure to ≤ 110% of the steam generator design pressure in order to meet the requirements of the ASME Code, Section III (Ref. 2). The MSSV design includes staggered setpoints, as shown in Table 3.7.1-2 of the specification, so that only the needed valves actuate. Staggered setpoints reduce the potential for valve chattering that is due to steam pressure insufficient to fully open the valves following a turbine-reactor trip.

APPLICABLE SAFETY ANALYSES

The design basis for the MSSVs comes from Reference 2 and its purpose is to limit the secondary system pressure to ≤ 110% of design pressure for any anticipated operating occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

The events that challenge the relieving capacity of the MSSVs, are those characterized as decreased heat removal events, which are presented in FSAR Section 15.2 (Ref. 3). Of these, the full power turbine trip without turbine bypass is the limiting AOO. This event also terminates normal feedwater flow to the steam generators.

The safety analysis demonstrates that the transient response for turbine trip without a direct reactor trip presents no hazard to the integrity of the RCS or the Main Steam System. One turbine trip analysis is performed assuming primary system pressure control via operation of the pressurizer spray. This analysis demonstrates that the departure from nucleate boiling (DNB) design basis is met. Another analysis is performed assuming no primary system pressure control, but crediting reactor trip on high pressurizer pressure and operation of the pressurizer

APPLICABLE SAFETY ANALYSES (continued)

safety valves. This analysis demonstrates that RCS integrity is maintained by showing that the maximum RCS pressure does not exceed 110% of the design pressure.

All cases analyzed demonstrate that the MSSVs maintain Main Steam System integrity by limiting the maximum steam pressure to less than 110% of the steam generator design pressure.

In addition to the decreased heat removal events, reactivity insertion events may also challenge the relieving capacity of the MSSVs. The uncontrolled rod cluster control assembly (RCCA) bank withdrawal at power event is characterized by an increase in core power and steam generation rate until reactor trip occurs when either the Overtemperature ΔT or Power Range Neutron Flux-High setpoint is reached. Steam flow to the turbine will not increase from its initial value for this event. The increased heat transfer to the secondary side causes an increase in steam pressure and may result in opening of the MSSVs prior to reactor trip, assuming no credit for operation of the atmospheric or condenser steam dump valves. The FSAR Section 15.4.2 safety analysis of the RCCA bank withdrawal at power event for a range of initial core power levels demonstrates that the MSSVs are capable of preventing secondary side overpressurization for this AOO (Ref. 4).

The FSAR safety analyses discussed above assume that all of the MSSVs for each steam generator are OPERABLE. If there are inoperable MSSV(s), it is necessary to limit the primary system power during steady state operation and AOOs to a value that does not result in exceeding the combined steam flow capacity of the turbine (if available) and the remaining OPERABLE MSSVs. The required limitation on primary system power necessary to prevent secondary system overpressurization may be determined by system transient analyses or conservatively arrived at by a simple heat balance calculation. In some circumstances it is necessary to limit the primary side heat generation that can be achieved during an AOO by reducing the setpoint of the Power Range Neutron Flux-High reactor trip function. For example, if more than one MSSV on a single steam generator is inoperable, an uncontrolled RCCA bank withdrawal at power event occurring from a partial power level may result in an increase in reactor power that exceeds the combined steam flow capacity of the turbine and the remaining OPERABLE MSSVs. Thus, for multiple inoperable MSSVs on the same steam generator it is necessary to prevent this power increase

APPLICABLE SAFETY ANALYSES (continued)

by lowering the Power Range Neutron Flux-High setpoint to an appropriate value.

In addition, the MSSVs are containment isolation valves and support the assumptions related to minimizing the loss of inventory and establishing the containment boundary during major accidents. Therefore, the safety analysis of any event requiring isolation of containment is applicable to the MSSVs.

The MSSVs are assumed to have two active and one passive failure modes. The active failure modes are spurious opening, and failure to reclose once opened. The passive failure mode is failure to open upon demand.

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

LCO

The accident analysis requires six MSSVs per steam generator to provide overpressure protection for design basis transients occurring at 102% of RTP. A MSSV will be considered inoperable if it fails to open in the event of a pressure excursion in excess of the setpoint. The LCO requires that six MSSVs be OPERABLE in compliance with Reference 2. Operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet ASME Code requirements). These limitations are according to Table 3.7.1-1 of the specification and Required Action A.1.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseat when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Program (Ref. 5).

The lift settings specified in Table 3.7.1-2 in the accompanying LCO, correspond to ambient conditions of the valve at nominal operating temperature and pressure.

This LCO provides assurance that the MSSVs will perform their designed safety functions to mitigate the consequences of accidents that could result in a challenge to the RCPB or Main Steam System integrity.

BASES

APPLICABILITY

In MODE 1, 2, 3, or 4, six MSSVs per steam generator are required to be OPERABLE. However, as stated in the Note to the Applicability, the MSSVs are not required to be OPERABLE for opening in MODE 4 when the Reactor Coolant System (RCS) is being cooled by the Normal Residual Heat Removal System (RNS).

In MODE 4 with the RNS in service, there are no credible transients requiring the MSSVs to be opened. The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized. Thus, there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each MSSV.

A.1 and A.2

With one or both steam generators with one or more MSSVs inoperable for opening, reduce power so that the available MSSV relieving capacity meets Reference 2 requirements for the applicable THERMAL POWER.

Operation with less than all six MSSVs OPERABLE for opening for each steam generator is permissible, if THERMAL POWER is proportionally limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the most limiting steam generator is not greater than the available relief capacity in that steam generator. The maximum THERMAL POWER corresponding to the heat removal capacity of the remaining OPERABLE MSSVs is determined via a conservative heat balance calculation as described below and in the attachment to Reference 6, with an appropriate allowance for calorimetric power uncertainty.

To determine the maximum THERMAL POWER corresponding to the heat removal capacity of the remaining OPERABLE MSSVs, the governing heat transfer relationship is the equation $q = (dm/dt)\ \Delta h$, where q is the heat input from the primary side, dm/dt is the mass flow rate of the steam, and Δh is the increase in enthalpy that occurs in converting the secondary side water to steam. If it is conservatively assumed that the secondary side water is all saturated liquid (i.e., no subcooled feedwater), then the Δh is the heat of vaporization (h_{fg}) at the steam relief pressure. The following equation is used to determine the maximum allowable power level for continued operation with inoperable MSSVs.

ACTIONS (continued)

Maximum NSSS Power ≤ (100/Q) (w_s h_{fg} N) / K

where:

Q = Nominal NSSS power rating of the plant (including reactor coolant pump heat), MWt

K = Conversion factor, 947.82 (Btu/sec)/MWt

w_s = Minimum total steam flow rate capability of the OPERABLE MSSVs on any one steam generator at the highest OPERABLE MSSV opening pressure, including tolerance and accumulation as appropriate, lbm/sec

h_{fg} = Heat of vaporization at the highest MSSV opening pressure, including tolerance and accumulation as appropriate, Btu/lbm

N = Number of steam generators in the plant

To determine the Table 3.7.1-1 Maximum Allowable Power, the Maximum NSSS Power calculated using the equation above is reduced by 9% RTP to account for Nuclear Instrument System trip channel uncertainties.

The allowed Completion Times are reasonable based on operating experience to accomplish the Required Actions in an orderly manner without challenging unit systems.

B.1

With one or both steam generators with one or more MSSVs inoperable for closing, the inoperable MSSV must be restored to OPERABLE status within 72 hours. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4.

BASES

ACTIONS (continued)

C.1 and C.2

If any Required Action and associated Completion Time of Condition A is not met, or if one or both steam generators have less than two MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours, and in MODE 4, with RCS cooling provided by the RNS, within 24 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.

D.1 and D.2

If the Required Action and associated Completion Time of Condition B is not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoint in accordance with the Inservice Testing Program. The safety and relief valve tests are required to be performed in accordance with ASME OM Code (Refs. 5 and 7). According to Reference 5, the following tests are required:

a. Visual examination;

b. Seat tightness determination;

c. Set pressure determination (lift setting);

d. Compliance with owner's seat tightness criteria; and

e. Verification of the balancing device integrity on balanced valves.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The ANSI/ASME standard requires that all valves be tested every 5 years and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a ±1% setpoint tolerance for OPERABILITY, and the valves are reset to remain within ±1% during the Surveillance to allow for drift. The lift settings, according to Table 3.7.1-2, correspond to ambient conditions of the valve at nominal operating temperature and pressure.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

REFERENCES

1. FSAR Chapter 10, “Steam and Power Conversion Systems Description.”
2. ASME Boiler and Pressure Vessel Code, Section III, Article NC-7000, “Overpressure Protection,” Class 2 Components.
3. FSAR Section 15.2, “Decreased Heat Removal by Secondary System.”
4. FSAR Section 15.4.2, “Uncontrolled Rod Cluster Control Assembly Bank Withdrawal at Power.”
5. ASME OM Code, Appendix I, “Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants.”
6. NRC Information Notice 94-60, “Potential Overpressurization of the Main Steam System,” August 22, 1994.
7. ASME OM Code, “Code for Operation and Maintenance of Nuclear Power Plants.”