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10 CFR 50.90

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102-05043-DMS/SAB/GAM
February 4, 2004

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

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Request for Amendment to Technical Specification 3.7.1,
Main Steam Safety Valves**

Pursuant to 10 CFR 50.90, Arizona Public Service Company (APS) hereby requests to amend Operating Licenses NPF-41, NPF-51, and NPF-74 for Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3, respectively. The proposed amendment would revise Technical Specification (TS) 3.7.1, Main Steam Safety Valves (MSSVs), to permit operation in Mode 3 with five to eight inoperable MSSVs (two to five operable MSSVs) per steam generator, increase the Completion Time to reduce the variable overpower trip (VOPT) setpoint when one to four MSSVs per steam generator are inoperable, and make associated editorial changes. These changes are requested in order to reduce or eliminate unnecessary plant mode changes and/or personnel actions and distractions that provide no benefit to safety.

APS requests approval of the proposed amendment by November 30, 2004, with an implementation period of 90 days after approval. This requested approval date has been administratively selected to accommodate a normal NRC review time, and is not needed for continued plant operation. Associated TS Bases changes, provided for information in Attachment 2, would be implemented at the same time as the approved amendment.

No commitments are being made to the NRC by this letter. Should you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

DMS/SAB/GAM

A member of the **STARS** (Strategic Teaming and Resource Sharing) Alliance

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Enclosures:

1. Notarized Affidavit
2. Arizona Public Service Company's Evaluation of the Proposed Changes

Attachments:

1. Proposed Technical Specification Changes (mark-up)
2. Proposed Technical Specification Pages (retyped)
3. Changes to TS Bases Pages (For Information Only)

cc: B. S. Mallett NRC Region IV Regional Administrator
M. B. Fields NRC NRR Project Manager
N. L. Salgado NRC Senior Resident Inspector for PVNGS
A. V. Godwin Arizona Radiation Regulatory Agency (ARRA)

ENCLOSURE 1

NOTARIZED AFFIDAVIT

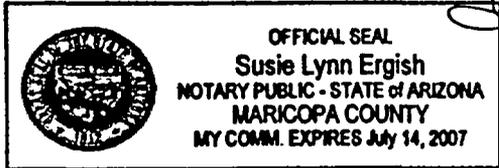
STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, David M. Smith, represent that I am Plant Manager, Palo Verde, Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.



David M. Smith

Sworn To Before Me This 4th Day Of February, 2004.



Susie Lynn Ergish
Notary Public

Notary Commission Stamp

ENCLOSURE 2

ARIZONA PUBLIC SERVICE COMPANY'S EVALUATION OF THE PROPOSED CHANGES

**Subject: Request for Amendment to Technical Specification 3.7.1, Main Steam
Safety Valves**

1.0 Description

2.0 Proposed Changes

3.0 Background

3.1 System Description

3.2 Need for the Proposed Changes

4.0 Technical Analysis

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

5.2 Applicable Regulatory Requirements/Criteria

6.0 Environmental Consideration

1.0 DESCRIPTION

This letter is a request from Arizona Public Service Company (APS) to amend Operating Licenses NPF-41, NPF-51, and NPF-74 for Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3, respectively. The proposed amendment would revise Technical Specification (TS) 3.7.1, Main Steam Safety Valves (MSSVs), to permit operation in Mode 3 with five to eight inoperable MSSVs (two to five operable MSSVs) per steam generator, increase the Completion Time to reduce the variable overpower trip (VOPT) setpoint when one to four MSSVs per steam generator are inoperable, and make associated editorial changes. The proposed change to increase the VOPT setpoint Completion Time is consistent with NRC-approved Industry/Technical Specification Task Force TSTF-235, Revision 1, incorporated in Revision 2 of NUREG-1432, Combustion Engineering Standard Technical Specifications.

These changes are requested in order to reduce or eliminate unnecessary plant mode changes and/or personnel actions and distractions that provide no benefit to safety.

2.0 PROPOSED CHANGES

The proposed amendment would make the following changes.

1. Change TS 3.7.1 Condition A from "One or more required MSSVs inoperable," to "One to four required MSSVs per steam generator inoperable in MODES 1 or 2."
2. Change the Completion Time of TS 3.7.1 Required Action A.2 (to reduce the variable overpower trip - high setpoint) from 12 hours to 36 hours.
3. Change TS 3.7.1 Condition B to specify that when the Required Actions and associated Completion Times of Condition A are not met, OR when five to eight required MSSVs per steam generator are inoperable in Modes 1 or 2, the Required Action is to "Be in Mode 3" within a Completion Time of "6 hours."

Also, for consistency, Table 3.7.1-1 would be expanded to list two through five required operable MSSVs per steam generator (five through eight inoperable MSSVs), with a corresponding highest allowed Mode of Mode 3. The maximum allowable variable overpower trip (VOTP) setpoint for five through eight inoperable MSSVs would be specified as "NA," for not applicable.

4. Add a new TS 3.7.1 Condition C to specify that when the Required Action and associated Completion Time of Condition B not met, the Required Action is to be in Mode 4 in a Completion Time of six hours.
5. Add a new TS 3.7.1 Condition D to specify that with more than eight MSSVs per steam generator inoperable, the Required Action is to be in Mode 3 in a Completion Time of 6 hours, and to be in Mode 4 in a Completion Time of 12 hours.

6. Make editorial changes to Table 3.7.1-1 to (1) specify the highest mode in addition to the maximum power, (2) add a footnote stating that the VOPT setpoint is not required to be reset in Mode 3, and (3) add a column listing the number of inoperable MSSVs per steam generator corresponding to the number of operable MSSVs per steam generator.

These proposed changes are shown in marked-up TS pages provided in Attachment 1. Proposed retyped TS pages are provided in Attachment 2. Associated changes to the TS Bases are provided for information in marked-up pages in Attachment 3.

3.0 BACKGROUND

3.1 System Description

The primary purpose of the main steam safety valves (MSSVs) is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary by providing a heat sink for the removal of energy from the reactor coolant system if the preferred heat sink, provided by the condenser and circulating water system, is not available.¹

Five MSSVs are located on each of the four main steam lines (two main steam lines per steam generator), outside containment, upstream of the main steam isolation valves, as described in Section 5.2 of the PVNGS UFSAR. The MSSV rated capacity passes the full steam flow at 102% of rated thermal power (100% +2% for instrument error) with the valves full open. This meets the requirements of the ASME Boiler and Pressure Vessel Code, Section III, Article NC-7000, Class 2 Components.²

The design basis for the MSSVs comes from ASME Code, Section III. The MSSVs limit secondary system pressure to less than or equal to 110% of design pressure when passing 100% of design steam flow. This design basis is sufficient to cope with any Anticipated Operational Occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.³

When 10 MSSVs are OPERABLE per steam generator (none inoperable), thermal power is limited to 100% rated thermal power (RTP) per the Operating Licenses, and the variable overpower trip (VOPT) allowable trip setpoint is limited to 111.0% RTP.⁴ When one to four MSSVs per steam generator are inoperable in Modes 1 or 2, an alternative to restoring inoperable MSSV(s) to operable status is to reduce power so that the available MSSV relieving capacity meets Code requirements for the power level. Operation may continue in Modes 1 or 2 with one to four inoperable MSSVs per steam generator by reducing the ceiling on the VOPT to an amount over the allowable thermal power equal to the band given for this trip according to TS Table 3.7.1-1.

¹ TS Bases B 3.7.1, Background; UFSAR 5.1.5, 5.2.2, 5.4.13, and 10.3.2.2.3.

² TS Bases B 3.7.1, Background.

³ TS Bases B 3.7.1, Applicable Safety Analysis.

⁴ TS Table 3.3.1-1.

In Mode 3, reactor residual heat removal capability is provided by the steam generators utilizing the turbine bypass system or the atmospheric dump valves (ADVs). If the turbine bypass system or the ADVs fail to be used to relieve pressure prior to a steam generator pressure increase to the MSSV setpoints, the MSSVs will automatically lift to remove heat and provide overpressure protection for the secondary system.⁵

3.2 Need for the Proposed Changes

In License Amendment No. 117, APS converted the PVNGS TSs to Improved Standard Technical Specifications (ITS) based on NUREG-1432, Revision 1.⁶ Table 3.7.1-1 and Condition B of TS 3.7.1 in NUREG-1432, Revision 1 provided bracketed entries for as few as two required operable MSSVs per steam generator. At the time of conversion to ITS, APS choose to specify a minimum of six operable MSSVs per steam generator because that was the minimum number of operable MSSVs that were specified in the previous TSs. Since then, APS has determined that modifying TS 3.7.1 to allow the plant to remain in Mode 3 with a minimum of two operable MSSVs per steam generator (up to eight inoperable MSSVs per steam generator) can reduce unnecessary plant transitions to Mode 4 while continuing to provide the overpressure protection required by ASME Code.

The proposed change to increase the Completion Time for Required Action A.2 of TS 3.7.1 (to reduce the variable overpower trip - high setpoint) from 12 hours to 36 hours will reduce unnecessary diversion of attention and resources following a plant transient and will still provide a reasonable time to accomplish the required action. This proposed change is consistent with NRC-approved Industry/Technical Specification Task Force TSTF-235, Revision 1, incorporated in Revision 2 of NUREG-1432, Combustion Engineering Standard Technical Specifications.

The proposed editorial change to Table 3.7.1-1 to add a column listing the number of inoperable MSSVs per steam generator will enhance human performance. The footnote stating that the VOPT setpoint is not required to be reset in Mode 3 will eliminate potential confusion and ensure that this Table is consistent with TSs 3.3.1 and 3.3.2 which do not require the VOPT to be operable in Mode 3. The additional column will eliminate the need to calculate the number of inoperable MSSVs corresponding to the minimum number of MSSVs per steam generator required operable when complying with one of the TS 3.7.1 Conditions.

4.0 TECHNICAL ANALYSIS

4.1 Change TS 3.7.1 Condition A from "one or more required MSSVs inoperable," to "one to four required MSSVs per steam generator inoperable in MODES 1 or 2."

⁵ UFSAR 3.1.30, 7.4.1.1.7, and 10.4.4

⁶ NRC Letter to APS dated May 20, 1998, Conversion to Improved Technical Specifications for the Palo Verde Nuclear Generating Station, Unit No. 1, Unit No. 2, and Unit No. 3.

Currently, Condition A of TS 3.7.1 specifies that when one or more required MSSVs are inoperable, power and the variable overpower trip (VOPT) setpoint must be reduced to the values listed in Table 3.7.1-1. Table 3.7.1-1 currently only lists reduced power and VOPT setpoint values for six to nine operable MSSVs (one to four inoperable MSSVs) per steam generator. The reduced power levels and VOPT setpoints only apply in Modes 1 and 2 because in Mode 3 reactivity must be less than $0.99 K_{eff}$ (reactor is subcritical) per TS Table 1.1-1, and the VOPT trip is not required to be operable in Mode 3, per TSs 3.3.1 and 3.3.2. Therefore, since the current TS 3.7.1 Condition A can only be applied when six to nine MSSVs are operable (one to four MSSVs inoperable) in Modes 1 or 2, this proposed change to specify "one to four required MSSVs inoperable in MODES 1 or 2" in Condition A does not change the Condition A requirements from the current TS 3.7.1.

4.2 Change the Completion Time of TS 3.7.1 Required Action A.2 (to reduce the variable overpower trip [VOPT] - high setpoint) from 12 hours to 36 hours.

Required Action A.2 of TS 3.7.1 specifies a Completion Time of 12 hours to reduce the variable overpower trip (VOPT) - high setpoint if one or more required MSSVs are inoperable. The proposed increase in the Completion Time for Action A.2 from 12 hours to 36 hours is consistent with Industry/Technical Specification Task Force TSTF-235, Revision 1, incorporated in Revision 2 of NUREG-1432, Combustion Engineering Standard Technical Specifications. The revised TS 3.7.1 Bases associated with TSTF-235, Revision 1, states that the Completion Time of 36 hours for Required Action A.2 is based on a reasonable time to correct the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period.

4.3 Change TS 3.7.1 Condition B to specify that when the Required Actions and associated Completion Times of Condition A are not met, OR when five to eight required MSSVs per steam generator are inoperable in Modes 1 or 2, the Required Action is to be in Mode 3 in a Completion Time of 6 hours.

Also, for consistency, Table 3.7.1-1 would be expanded to list two through five required operable MSSVs per steam generator (five through eight inoperable MSSVs), with a corresponding highest allowed Mode of Mode 3. The maximum allowable variable overpower trip setpoint for five through eight inoperable MSSVs would be specified as "NA," for not applicable.

The proposed changes to Condition B of TS 3.7.1 and Table 3.7.1-1 would allow the plant to remain in Mode 3 with a minimum of two operable MSSVs per steam generator (up to eight inoperable MSSVs). Currently, Condition B of TS 3.7.1 requires the plant to be placed in Mode 4 when there are up to four inoperable MSSVs per steam generator and reactor power and the VOPT setpoint are not reduced within their specified Completion Times, or whenever there are more than four inoperable MSSVs per steam generator.

In Mode 3, reactor core decay heat and reactor coolant pump heat removal capability is provided by the steam generators utilizing the turbine bypass system or the atmospheric dump valves (ADVs).⁷ If the turbine bypass system and the ADVs fail to be used prior to a steam generator pressure increase to the MSSV setpoints, the MSSVs will lift to remove heat and provide overpressure protection for the secondary system.

Reactor decay heat is a maximum of 6.6% of rated thermal power (RTP) immediately following a reactor trip when the plant would be in Mode 3.⁸ Heat from non-reactor sources, primarily reactor coolant pump heat, is as high as 26 MWt, or about 0.65% of 3990 MWt RTP.⁹ The combination of decay heat and pump heat immediately after a reactor trip would equal approximately 7.3% of 3990 MWt RTP. The total design steam flow at 100% of 3990 MWt RTP is 17.9E6 lb/hr¹⁰, and 7.3% of that value would be 1.31E6 lb/hr. (Note: the total steam flow at 3990 MWt RTP for Unit 2 bounds the total steam flow at 3876 MWt RTP for Units 1 and 3.) The minimum rated relieving capacity of a single MSSV is 9.415E5 lb/hr, and two MSSVs would relieve 1.883E6 lb/hr.¹¹ Therefore two MSSVs have sufficient relieving capacity to dissipate core decay heat and reactor coolant pump heat in Mode 3 to limit secondary system pressure to less than or equal to 110% of design pressure, as required by ASME Boiler and Pressure Vessel Code, Section III, Article NC-7000. A minimum of two MSSVs per steam generator (four total) will be required to be operable in Mode 3 in case of a single failure of one of the valves in either steam generator.

The maximum allowable variable overpower trip setpoint for five through eight inoperable MSSVs would be specified as "NA," for not applicable. This is consistent with TS 3.3.1 and 3.3.2, which do not require the VOPT to be operable in Mode 3.

The six hour Completion Time to be in Mode 3 is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

4.4 Add a new Condition C to specify that when the Required Action and associated Completion Time of Condition B not met, the Required Action is to be in Mode 4 in a Completion Time of six hours.

If the plant is not placed in Mode 3 within the associated Completion Time for Required Action B.1, 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 4 within 6 hours. The allowed Completion Time, in conjunction with the Completion Time for Required Action B.1, is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

⁷ UFSAR 3.1.30, 7.4.1.1.7, and 10.4.4.

⁸ UFSAR Table 6.2.1-21.

⁹ UFSAR Table 4.4-11.

¹⁰ APS Letter no. 102-04641, dated December 21, 2001, "Request for a License Amendment to Support Replacement of Steam Generators and Upgraded Power Operations," Table 2.1-1.

¹¹ UFSAR Table 10.3-1.

- 4.5** Add a new Condition D to specify that with more than eight required MSSVs per steam generator inoperable, the Required Action is to be in Mode 3 in a Completion Time of 6 hours, and to be in Mode 4 in a Completion Time of 12 hours.

If one or more steam generators have more than eight MSSVs inoperable, 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 4 within 12 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 unit systems.

- 4.6** Make editorial changes to Table 3.7.1-1 to specify the "highest mode" in addition to the maximum power, add a footnote stating that the VOPT setpoint is not required to be reset in Mode 3, and add a column listing the number of inoperable MSSVs per steam generator.

The changes described in Section 4.3 would expand TS Table 3.7.1-1 to include five through eight inoperable MSSVs per steam generator, with a corresponding highest allowed Mode of Mode 3. To be consistent with that proposed change, the heading in the column currently titled "Maximum Power (%RTP)" would be editorially enhanced to include "or HIGHEST MODE."

The footnote stating that the VOPT setpoint is not required to be reset in Mode 3 will ensure that Table 3.7.1-1 is consistent with TSs 3.3.1 and 3.3.2, which do not require the VOPT to be operable in Mode 3.

The proposed editorial change to Table 3.7.1-1 to add a column listing the number of inoperable MSSVs per steam generator will enhance human performance. The additional column will eliminate the need to calculate the number of inoperable MSSVs corresponding to the minimum number of MSSVs per steam generator required operable when complying with one of the TS 3.7.1 Conditions.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

The proposed amendment would revise Technical Specification (TS) 3.7.1, Main Steam Safety Valves (MSSVs), to:

- Permit operation in Mode 3 when there are five to eight inoperable MSSVs (two to five operable MSSVs) per steam generator,

- Increase the Completion Time for Required Action A.2 of TS 3.7.1 (reduce the variable overpower trip [VOPT] setpoint when one to four MSSVs per steam generator are inoperable) from 12 hours to 36 hours, and
- Make associated editorial changes.

APS has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No. Each change is discussed below.

- Revise Technical Specification (TS) 3.7.1 to permit operation in Mode 3 when there are five to eight inoperable MSSVs (two to five operable MSSVs) per steam generator.

This proposed change would allow the plant to remain in Mode 3 with as few as two operable MSSVs per steam generator. Currently, the plant must be placed in Mode 4 with fewer than six operable MSSVs per steam generator. Two MSSVs have sufficient relieving capacity to dissipate core decay heat and reactor coolant pump heat in Mode 3 to limit secondary system pressure to less than or equal to 110% of design pressure, as required by ASME Code, Section III. A minimum of two MSSVs per steam generator (four total) would be required to be operable in Mode 3 in case of a single failure of one of the valves. Since this proposed change would continue to provide over-pressure protection and heat removal capability in Mode 3, this change would have no effect on any analyzed accidents. Therefore, this proposed change would not involve a significant increase in the probability or consequences of an accident previously evaluated.

- Increase the Completion Time for Required Action A.2 of TS 3.7.1 (reduce the variable overpower trip [VOPT] setpoint when one to four MSSVs per steam generator are inoperable) from 12 hours to 36 hours.

Required Action A.2 of TS 3.7.1 specifies a Completion Time of 12 hours to reduce the variable overpower trip (VOPT) - high setpoint if one or more required MSSVs are inoperable. The proposed increase in the Completion Time for Action A.2 from 12 hours to 36 hours is consistent with Industry/Technical Specification Task Force TSTF-235, Revision 1, incorporated in Revision 2 of NUREG-1432, Combustion Engineering Standard Technical Specifications. The revised TS 3.7.1 Bases associated with TSTF-235, Revision 1, states that the Completion Time of 36 hours for Required Action A.2 is based on a reasonable time to correct

the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period. Increasing the Completion Time to reset the VOPT from 12 hours to 36 hours does not involve a significant increase in the probability or consequences of an accident previously evaluated.

- Make associated editorial changes.

The associated editorial changes do not change any structure, system or component (SSC) or affect the operation or maintenance of any SSC. They are editorial enhancements to make the TSs easier to understand, eliminate potential inconsistencies with other TSs, and reduce the potential for human errors. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No. Each change is discussed below.

- Revise Technical Specification (TS) 3.7.1 to permit operation in Mode 3 when there are five to eight inoperable MSSVs (two to five operable MSSVs) per steam generator.

This proposed change would allow the plant to remain in Mode 3 with as few as two operable MSSVs per steam generator. Currently, the plant must be placed in Mode 4 with fewer than six operable MSSVs per steam generator. Two MSSVs have sufficient relieving capacity to dissipate core decay heat and reactor coolant pump heat in Mode 3 to limit secondary system pressure to less than or equal to 110% of design pressure, as required by ASME Code, Section III. A minimum of two MSSVs per steam generator (four total) would be required to be operable in Mode 3 in case of a single failure of one of the valves. This proposed change would continue to provide over-pressure protection and heat removal capability in Mode 3. Therefore, this proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

- Increase the Completion Time for Required Action A.2 of TS 3.7.1 (reduce the variable overpower trip [VOPT] setpoint when one to four MSSVs per steam generator are inoperable) from 12 hours to 36 hours.

Required Action A.2 of TS 3.7.1 specifies a Completion Time of 12 hours to reduce the variable overpower trip - high setpoint if one or more required MSSVs are inoperable. The proposed increase in the Completion Time for Action A.2 from 12 hours to 36 hours is consistent with Industry/Technical Specification Task Force TSTF-235, Revision 1, incorporated in Revision 2 of NUREG-1432, Combustion Engineering Standard Technical Specifications. The revised TS 3.7.1 Bases associated with TSTF-235, Revision 1, states that the Completion Time of 36 hours for Required Action A.2 is based on a reasonable time to correct the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period. Therefore, this proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

- Make associated editorial changes.

The associated editorial changes do not change any structure, system or component (SSC) or affect the operation or maintenance of any SSC. They are editorial enhancements to make the TSs easier to understand, eliminate potential inconsistencies with other TSs, and reduce the potential for human errors. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No. Each change is discussed below.

- Revise Technical Specification (TS) 3.7.1 permit operation in Mode 3 when there are five to eight inoperable MSSVs (two to five operable MSSVs) per steam generator.

This proposed change would allow the plant to remain in Mode 3 when there are as few as two operable MSSVs per steam generator. Currently, the plant must be placed in Mode 4 with fewer than six operable MSSVs per steam generator. Two MSSVs have sufficient relieving capacity to dissipate core decay heat and reactor coolant pump heat in Mode 3 to limit secondary system pressure to less than or equal to 110% of design pressure, as required by ASME Code, Section III. A minimum of two MSSVs per steam generator (four total) would be required to be operable in Mode 3 in case of a single failure of one of the valves. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

- Increase the Completion Time for Required Action A.2 of TS 3.7.1 (reduce the variable overpower trip [VOPT] setpoint when one to four MSSVs per steam generator are inoperable) from 12 hours to 36 hours.

Required Action A.2 of TS 3.7.1 specifies a Completion Time of 12 hours to reduce the variable overpower trip - high setpoint if one or more required MSSVs are inoperable. The proposed increase in the Completion Time for Action A.2 from 12 hours to 36 hours is consistent with Industry/Technical Specification Task Force TSTF-235, Revision 1, incorporated in Revision 2 of NUREG-1432, Combustion Engineering Standard Technical Specifications. The revised TS 3.7.1 Bases associated with TSTF-235, Revision 1, states that the Completion Time of 36 hours for Required Action A.2 is based on a reasonable time to correct the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

- Make associated editorial changes.

The associated editorial changes do not change any structure, system or component (SSC) or affect the operation or maintenance of any SSC. They are editorial enhancements to make the TSs easier to understand, eliminate potential inconsistencies with other TSs, and reduce the potential for human errors. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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

5.2 Applicable Regulatory Requirements/Criteria

5.2.1 10 CFR 50.36(c)(2)(ii) requires "A technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the following criteria: (A) Criterion 1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. (B) Criterion 2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. (C) Criterion 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that

either assumes the failure of or presents a challenge to the integrity of a fission product barrier. (D) Criterion 4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.”

The proposed amendment will continue to comply with the requirements of 10 CFR 50.36(c)(2)(ii).

5.2.2 10 CFR Part 50, Appendix A, General Design Criterion 34 - Residual heat removal, requires that *“A system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.”*

The proposed amendment will continue to comply with the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 34.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. 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 effluent that may be released offsite, or (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.

Attachment 1

Proposed Technical Specification Changes (mark-up)

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 The MSSVs shall be OPERABLE as specified in Table 3.7.1-1 and Table 3.7.1-2.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more <u>One to four</u> required MSSVs per steam generator inoperable in MODES 1 or 2.</p>	<p>A.1 Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1.</p> <p><u>AND</u></p> <p>A.2 Reduce the variable overpower trip - high setpoint in accordance with Table 3.7.1-1.</p>	<p>4 hours</p> <p>12 <u>36</u> hours</p>
<p>B. Required Actions and associated Completion Times <u>of Condition A</u> not met.</p> <p><u>OR</u></p> <p>One or more required steam generators with less than six MSSVs OPERABLE</p> <p><u>Five to eight</u> required MSSVs per steam generator inoperable in MODES 1 or 2.</p>	<p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C: Required Action and associated Completion Time of Condition B not met.</p>	<p>C:1 Be in MODE 4.</p>	<p>6 hours</p>
<p>D: More than eight required MSSVs per steam generator inoperable.</p>	<p>D:1 Be in MODE 3. AND D:2 Be in MODE 4.</p>	<p>6 hours 12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.1.1 -----NOTE----- Not required to be performed prior to entry into MODE 3. -----</p> <p>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%.</p>	<p>In accordance with the Inservice Testing Program</p>

Table 3.7.1-1 (page 1 of 1)
Variable Overpower Trip Setpoint versus
OPERABLE Main Steam Safety Valves

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	NUMBER OF INOPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM POWER (% RTP) or HIGHEST MODE		MAXIMUM ALLOWABLE VARIABLE OVERPOWER TRIP SETPOINT ^(a) (% RTP)	
		Units 1 and 3	Unit 2	Units 1 and 3	Unit 2
10	0	100.0	100.0	111.0	111.0
9	1	98.2	90.0	108.0	99.7
8	2	87.3	80.0	97.1	89.7
7	3	76.4	68.0	86.2	77.7
6	4	65.5	56.0	75.3	65.7
5	5	MODE 3	MODE 3	NA	NA
4	6	MODE 3	MODE 3	NA	NA
3	7	MODE 3	MODE 3	NA	NA
2	8	MODE 3	MODE 3	NA	NA

(a) The VOPT setpoint is not required to be reset in MODE 3.

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

VALVE NUMBER		LIFT SETTING (psig ± 3%)
Steam Generator #1	Steam Generator #2	
SGE PSV 572	SGE PSV 554	1250
SGE PSV 579	SGE PSV 561	1250
SGE PSV 573	SGE PSV 555	1290
SGE PSV 578	SGE PSV 560	1290
SGE PSV 574	SGE PSV 556	1315
SGE PSV 575	SGE PSV 557	1315
SGE PSV 576	SGE PSV 558	1315
SGE PSV 577	SGE PSV 559	1315
SGE PSV 691	SGE PSV 694	1315
SGE PSV 692	SGE PSV 695	1315

Attachment 2

Proposed Technical Specification Pages (retyped)

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 The MSSVs shall be OPERABLE as specified in Table 3.7.1-1 and Table 3.7.1-2.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One to four required MSSVs per steam generator inoperable in MODES 1 or 2.	A.1 Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1.	4 hours
	<u>AND</u> A.2 Reduce the variable overpower trip – high setpoint in accordance with Table 3.7.1-1.	36 hours
B. Required Actions and associated Completion Times of Condition A not met. <u>OR</u> Five to eight required MSSVs per steam generator inoperable in MODES 1 or 2.	B.1 Be in MODE 3.	6 hours

(Continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 4.	6 hours
D. More than eight required MSSVs per steam generator inoperable.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.1.1 -----NOTE----- Not required to be performed prior to entry into MODE 3. -----</p> <p>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 $\pm 1\%$.</p>	<p>In accordance with the Inservice Testing Program</p>

Table 3.7.1-1 (page 1 of 1)
Variable Overpower Trip Setpoint versus
OPERABLE Main Steam Safety Valves

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	NUMBER OF INOPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM POWER (% RTP) or HIGHEST MODE		MAXIMUM ALLOWABLE VARIABLE OVERPOWER TRIP SETPOINT ^(a) (% RTP)	
		Units 1 and 3	Unit 2	Units 1 and 3	Unit 2
10	0	100.0	100.0	111.0	111.0
9	1	98.2	90.0	108.0	99.7
8	2	87.3	80.0	97.1	89.7
7	3	76.4	68.0	86.2	77.7
6	4	65.5	56.0	75.3	65.7
5	5	MODE 3	MODE 3	NA	NA
4	6	MODE 3	MODE 3	NA	NA
3	7	MODE 3	MODE 3	NA	NA
2	8	MODE 3	MODE 3	NA	NA

(a) The VOPT setpoint is not required to be reset in MODE 3.

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

VALVE NUMBER		LIFT SETTING (psig ± 3%)
Steam Generator #1	Steam Generator #2	
SGE PSV 572	SGE PSV 554	1250
SGE PSV 579	SGE PSV 561	1250
SGE PSV 573	SGE PSV 555	1290
SGE PSV 578	SGE PSV 560	1290
SGE PSV 574	SGE PSV 556	1315
SGE PSV 575	SGE PSV 557	1315
SGE PSV 576	SGE PSV 558	1315
SGE PSV 577	SGE PSV 559	1315
SGE PSV 691	SGE PSV 694	1315
SGE PSV 692	SGE PSV 695	1315

Attachment 3

**Changes to Technical Specification Bases Pages
(For Information Only)**

BASES

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.

Five MSSVs are located on each of the four main steam lines, outside containment, upstream of the main steam isolation valves, as described in the UFSAR, Section 5.2 (Ref. 1). The MSSV rated capacity passes the full steam flow at 102% RTP (100% + 2% for instrument error) with the valves full open. This meets the requirements of the ASME Code, Section III (Ref. 2). The MSSV design includes staggered setpoints, according to Table 3.7.1-2, in the accompanying LCO, so that only the number of valves needed will actuate. Staggered setpoints reduce the potential for valve chattering if there is insufficient steam pressure to fully open all valves.

APPLICABLE
SAFETY ANALYSES

The design basis for the MSSVs comes from Reference 2; its purpose is to limit secondary system pressure to $\leq 110\%$ of design pressure when passing 100% of design steam flow. This design basis is sufficient to cope with any Anticipated Operational Occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

The events that challenge the MSSV relieving capacity, and thus RCS pressure, are those characterized as decreased heat removal events, and are presented in the FSAR, Section 15.2 (Ref. 3). Of these, the full power Loss Of Condenser Vacuum (LOCV) event is the limiting AOO. An LOCV isolates the turbine and condenser, and terminates normal feedwater flow to the steam generators. Before delivery of auxiliary feedwater to the steam generators, RCS pressure reaches ≤ 2742 psia. This peak pressure is $< 110\%$ of the design pressure of 2500 psia, but high enough to actuate the pressurizer safety valves.

(continued)

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

The limiting accident for peak RCS pressure is the full power feedwater line break (FWLB), inside containment, with the failure of the backflow check valve in the feedwater line from the affected steam generator. Water from the affected steam generator is assumed to be lost through the break with minimal additional heat transfer from the RCS. With heat removal limited to the unaffected steam generator, the reduced heat transfer causes an increase in RCS temperature, and the resulting RCS fluid expansion causes an increase in pressure. The RCS pressure increases to ≤ 2843 psia, with the pressurizer safety valves providing relief capacity. These results were found acceptable by the NRC based on the low probability of the event.

In MODE 3, one MSSV per steam generator (two total) have sufficient relieving capacity to dissipate core decay heat and reactor coolant pump heat to limit secondary system pressure to less than or equal to 110% of design pressure, as required by ASME Code, Section III (Ref. 2). A minimum of two MSSVs per steam generator are required to be operable in Mode 3 in case of a single failure of one of the valves in either steam generator.

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

LCO

This LCO requires all MSSVs to be OPERABLE in compliance with Reference 2, even though this is not a requirement of the DBA analysis. This is because operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet Reference 2 requirements), and adjustment to the Reactor Protection System trip setpoints in Modes 1 and 2. These limitations are according to those shown in Table 3.7.1-1 and Required Action A.2 in the accompanying LCO. Since the VOPT is not required to be operable in MODE 3 according to TSs 3.3.1 and 3.3.2, a note has been added to Table 3.7.1-1 stating that the VOPT setpoint is not required to be reset in MODE 3. An MSSV is considered inoperable if it fails to open upon demand.

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

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

(continued)

BASES

LCO (Continued) This LCO provides assurance that the MSSVs will perform their designed safety function to mitigate the consequences of accidents that could result in a challenge to the RCPB.

APPLICABILITY In MODES ~~1, 2, and 3, 1 and 2~~, a minimum of six MSSVs per steam generator are required to be OPERABLE (~~up to four allowed inoperable~~), according to Table 3.7.1-1 in the accompanying LCO, which is limiting and bounds all lower MODES.

~~In MODE 3, a minimum of two MSSVs per steam generator are required to be operable (up to eight allowed inoperable) according to Table 3.7.1-1 in the accompanying LCO.~~

In MODES 4 and 5, there are no credible transients requiring the MSSVs.

The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; 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 (Units 1 and 3 Only)

When 10 MSSVs are OPERABLE per steam generator (~~none inoperable~~), THERMAL POWER is limited to 100% RTP per the Operating Licenses, and the VOPT allowable trip setpoint is limited to 111.0% RTP per TS Table 3.3.1-1.

~~When one to four MSSVs per steam generator are inoperable in MODES 1 or 2, an alternative to restoring inoperable MSSV(s) to OPERABLE status is to reduce power so that the available MSSV relieving capacity meets Code requirements for the power level. Operation may continue provided the allowable THERMAL POWER is equal to the product of: 1) the ratio of the number of MSSVs available per steam generator to the total number of MSSVs per steam generator, and 2) the ratio of the available relieving capacity to total steam flow, multiplied by 100%.~~

(continued)

BASES

ACTIONS

A.1 and A.2 (Units 1 and 3 Only) (continued)

$$\text{Allowable THERMAL POWER} = \frac{(10 - N)}{10} \times 109.2$$

With one or more MSSVs inoperable, the ceiling on the variable overpower trip is reduced to an amount over the allowable THERMAL POWER equal to the band given for this trip, according to Table 3.7.1-1 in the accompanying LCO.

$$\text{SP} = \text{Allowable THERMAL POWER} + 9.8$$

where:

SP = Reduced reactor trip setpoint in percent RTP. This is a ratio of the available relieving capacity over the total steam flow at rated power.

10 = Total number of MSSVs per steam generator.

N = Number of inoperable MSSVs on the steam generator with the greatest number of inoperable valves.

109.2 = Ratio of MSSV relieving capacity at 110% steam generator design pressure to calculated steam flow rate at 100% RTP + 2% instrument uncertainty expressed as a percentage (see text above).

9.8 = Band between the maximum THERMAL POWER and the variable overpower trip setpoint ceiling (Table 3.7.1-1).

The operator should limit the maximum steady state power level to the value determined from Table 3.7.1-1 to avoid an inadvertent overpower trip.

The Completion Time of ~~12~~ ~~36~~ hours for Required Action A.2 is based on ~~a reasonable time to correct the MSSV inoperability, the time required to perform power reduction,~~ operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period.

(continued)

BASES

ACTIONS

A.1 and A.2 (Unit 2 Only)

When 10 MSSVs are OPERABLE per steam generator (~~none inoperable~~), THERMAL POWER is limited to 100% RTP per the Operating Licenses, and the VOPT allowable trip setpoint is limited to 111.0% RTP per TS Table 3.3.1-1.

~~When one to four MSSVs per steam generator are inoperable in MODES 1 or 2,~~ an alternative to restoring inoperable MSSV(s) to OPERABLE status is to reduce power in accordance with Table 3.7.1-1. These reduced power levels, derived from the transient analysis, compensate for degraded relieving capacity and ensure that the results of the transient analysis are acceptable.

The operator should limit the maximum steady state power level to the value determined from Table 3.7.1-1 to avoid an inadvertent overpower trip.

The Completion Time of ~~12~~ 36 hours for Required Action A.2 is based on ~~a reasonable time to correct the MSSV inoperability, the time required to perform power reduction,~~ operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period.

(continued)

BASES

ACTIONS B.1 and B.2

(continued)

If the MSSVs cannot be restored to OPERABLE status in the associated Completion Time, or if one or more steam generators have less than six MSSVs OPERABLE, 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 4 within 12 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 unit systems.

B.1

When one to four required MSSVs per steam generator are inoperable in MODES 1 or 2 and reactor power and the VOPT setpoint are not reduced to within the required values within the required Completion Times, or when five to eight MSSVs per steam generator are inoperable in MODES 1 or 2, an alternative to restoring inoperable MSSV(s) to OPERABLE status is to place the plant in MODE 3 within 6 hours so that the available MSSV relieving capacity meets Code requirements. The allowed Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

C.1

If the plant is not placed in MODE 3 within the Completion Time for Required Action B.1, 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 4 within 6 hours. The allowed Completion Time, in conjunction with the Completion Time for Required Action B.1, is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

D.1

When more than eight required MSSVs per steam generator are inoperable, 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 4 within 12 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 unit systems.

(continued)

BASES

SURVEILLANCE
REQUIREMENTSSR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoints in accordance with the Inservice Testing Program. The ASME Code, Section XI (Ref. 4), requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM-1-1987 (Ref. 5). According to Reference 5, the following tests are required for MSSVs:

- a. Visual examination;
- b. Seat tightness determination;
- c. Setpoint pressure determination (lift setting);
- d. Compliance with owner's seat tightness criteria; and
- e. Verification of the balancing device integrity on balanced valves.

The ASME Standard requires that all valves be tested every 5 years, and a minimum of 20% of the valves tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a $\pm 3\%$ setpoint tolerance for OPERABILITY; however, the valves are reset to $\pm 1\%$ during the Surveillance to allow for drift.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.7.1.1 (continued)

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This is to allow testing of the MSSVs at hot conditions. 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. UFSAR, Section 5.2.
 2. ASME, Boiler and Pressure Vessel Code, Section III, Article NC-7000, Class 2 Components.
 3. UFSAR, Section 15.2.
 4. ASME, Boiler and Pressure Vessel Code, Section XI, Subsection IWV.
 5. ANSI/ASME OM-1-1987.
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