



Palo Verde Nuclear
Generating Station

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102-05306-CDM/TNW/RAB
July 9, 2005

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

- Reference:
1. Letter No. 102-05116-CDM/TNW/RAB, Dated July 9, 2004, from C. D. Mauldin, APS, to U. S. Nuclear Regulatory Commission, "Request for a License Amendment to Support Replacement of Steam Generators and Upgraded Power Operations in Units 1 and 3, and Associated Administrative Changes for Unit 2"
 2. Letter dated March 31, 2005, from J. E. Lyons, USNRC to Mr. Alex Marion, NEI, "Instrumentation, Systems, and Automation Society S67.04 Methods for Determining Trip Setpoints and Allowable Values for Safety-Related Instrumentation"

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3, Docket Nos. STN 50-528/529/530
Request for a License Amendment to Modify Reactor Protective and
Engineered Safety Features Actuation Systems Instrumentation
Technical Specification Tables**

In Reference 1, Arizona Public Service Company (APS) submitted a license amendment request to support steam generator replacement and upgraded power operations for PVNGS Units 1, 2 and 3. Several of the requested changes modified safety-related instrumentation setpoints. During the NRC staff review of the request, the staff developed a request for additional information concerning the methodology used for determining setpoints and uncertainties. In Reference 2, the staff prescribed a footnote to be added to the technical specifications for those safety-related setpoints being changed.

The proposed amendment would add a footnote requiring that the as-left instrument settings be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit. The proposed amendment would apply to the safety-related setpoint changes requested in Reference 1.

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

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Request for a License Amendment to Modify Reactor
Protective and Engineered Safety Features Actuation
Systems Instrumentation Technical Specification Tables
Page 2

Based on the responses to the three criteria provided for determining whether a significant hazard consideration exists as stated in 10CFR 50.92, APS has concluded that the proposed amendment involves no significant hazard considerations.

APS requests approval of this amendment concurrent with the approval of the amendment requested in Reference 1. Once approved, the amendment will be implemented within 120 days.

In accordance with the PVNGS Quality Assurance Program, the Plant Review Board and the Offsite Safety review Committee have reviewed and concurred with this proposed amendment. By copy of this letter, this submittal is being forwarded to the Arizona Radiation Regulatory Agency (ARRA) pursuant to 10 CFR 50.91(b) (1).

The following Commitment is being made to the NRC in this letter:

The TS bases and procedure changes required to support this amendment request will be completed prior to implementation of the approved technical specification change.

Should you have any questions, please call Mr. Thomas N. Weber at (623) 393-5764.

Sincerely,



CDM/TNW/RAB/ca

Enclosures:

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

Attachments:

1. Proposed Technical Specification Change (mark-up)
2. Proposed Technical Specification Change (re-typed)
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
	G. G. Warnick	NRC Senior Resident Inspector
	A. V. Godwin	Arizona Radiation Regulatory Agency (ARRA)

ENCLOSURE 1

NOTARIZED AFFIDAVIT

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

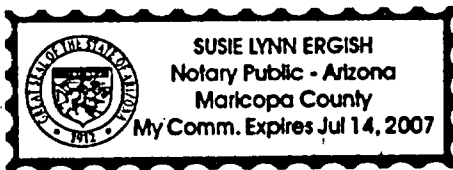
I, David Mauldin, represent that I am Vice President Nuclear Engineering and Support, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

David Mauldin

David Mauldin

Sworn To Before Me This 15th Day Of July, 2005.

Susie Lynn English
Notary Public



Notary Commission Stamp

ENCLOSURE 2

ARIZONA PUBLIC SERVICE COMPANY'S EVALUATION OF THE PROPOSED CHANGE

Proposed Change to Technical Specifications 3.3.1, 3.3.2, 3.3.5 and 3.7.1

- 1.0 Description
- 2.0 Proposed Change
- 3.0 Background
- 4.0 Technical Analysis
- 5.0 Regulatory Safety Analysis
 - 5.1 No Significant Hazards Consideration
 - 5.2 Applicable Regulatory Requirements
- 6.0 Environmental Consideration
- 7.0 Precedent

1.0 DESCRIPTION

This letter is a request to amend Operating Licenses NPF-41, NPF-51 and NPF-74 for the Palo Verde Nuclear Generating Station Units 1, 2 and 3.

The proposed changes supplement the changes requested in the letter from APS to USNRC dated July 9, 2004. The changes requested in this letter would add a footnote in Tables 3.3.1-1 (Before CPC Upgrade), 3.3.1-1 (After CPC Upgrade), 3.3.2-1, 3.3.5-1 and 3.7.1-1 specifying action to protect the safety limit. These supplemental changes are requested in accordance with the letter dated March 31, 2005, from the USNRC to Mr. Alex Marion, NEI.

2.0 PROPOSED CHANGE

The proposed amendment would make the following changes.

- A. Revise Table 3.3.1-1 to add a footnote to function 6, Steam generator #1 Pressure – Low and function 7, Steam Generator #2 Pressure – Low. The new footnote states:

The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

- B. Revise Table 3.3.2-1 to add a footnote to function 2, Steam Generator #1 Pressure – Low and function 3, Steam Generator #2 Pressure – low. The new footnote states:

The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

- C. Revise Table 3.3.5-1 to add a footnote to function 4a, Steam Generator #1 Pressure – Low and function 4b, Steam Generator #2 Pressure – Low. The new footnote states:

The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

- D. Revise Table 3.7.1-1 to add a footnote to the Maximum Allowable Variable Overpower Trip Setpoint values for units licensed to operate at 3990 MWt. The new footnote states:

The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

3.0 BACKGROUND

On July 9, 2004, Arizona Public Service Company (APS) submitted an amendment request to support replacement of steam generators and uprated power operation in Units 1 and 3. During the review of the requested amendment, the NRC staff requested additional information concerning calculation of uncertainties for the reactor protection and engineered safety features actuation system setpoints that would change as a result of the requested amendment. On March 31, 2005 the NRC staff, in a letter to Mr. Alex Marion, NEI, established a process that utilities could use to respond to RAIs that have been issued for similar licensing action requests (LARs). This amendment is requested to establish a requirement in the Technical Specifications to return as-left instrument settings to within the tolerance band established to protect the safety limit. A footnote should be added to the technical specifications for the Limiting Safety System Settings (LSSS) to be changed by the request made on July 9, 2004.

3.1 System Description

LCO 3.3.1, Reactor Protective System Instrumentation - Operating and Table 3.3.1-1, which it references, specify the required number of channels operable for each reactor trip function, the applicable modes for each function, the surveillance requirements and the allowable value for the setpoint to ensure that the purpose of the function is satisfied. The Steam Generator Pressure - Low trip function (items 6 and 7 in Table 3.3.1-1) provides protection against an excessive rate of heat extraction from the steam generators and the resulting rapid, uncontrolled cooldown of the Reactor Coolant System (RCS). This trip is needed to shut down the reactor and assist the Engineered Safety Features (ESF) system in the event of a Main Steam Line Break (MSLB) or Main Feedwater Line Break (MFWLB) accident. A Main Steam Isolation Signal (MSIS) is initiated simultaneously.¹

LCO 3.3.2, Reactor Protective System Instrumentation - Shutdown and Table 3.3.2-1, which it references, specify the required number of channels operable for each reactor trip function, the applicable modes for each function, the surveillance requirements and the allowable value for the setpoint to ensure that the purpose of the function is satisfied. The Steam Generator Pressure - Low trip function (items 2 and 3 in Table 3.3.2-1) provides shutdown margin to prevent or minimize the return to power following a large MSLB in Mode 3.²

LCO 3.3.5, Engineered Safety Features Actuation System Instrumentation and Table 3.3.5-1, which it references specify the required number of channels operable for each reactor trip function, the applicable modes for each function, and the allowable value for the setpoint to ensure that the purpose of the function is satisfied. The Steam Generator Pressure - Low signal actuates a MSIS to prevent an excessive rate of heat extraction and subsequent cooldown of the RCS in the event of a MSLB or MFWLB.³

¹ TS Bases B.3.3.1, Applicable Safety Analysis

² TS Bases 3.3.2, Applicable Safety Analysis

³ TS Bases 3.3.5, Applicable Safety Analysis

Table 3.7.1-1, Variable Overpower Trip Setpoint versus Operable Main Steam Safety Valves, referenced in LCO 3.7.1, Main Steam Safety Valves (MSSVs), specifies maximum power levels and overpower reactor trip setpoints for specified numbers of OPERABLE MSSVs. 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.⁴

3.2 Need for the Proposed Change

The proposed footnote will ensure that the as-left instrument setting will be returned to a setting within the tolerance band of the trip setpoint that has been established to protect the safety limit.

4.0 TECHNICAL ANALYSIS

The action of ensuring that the as-left instrument setting is within the tolerance band of the field installed trip setpoint is a technical requirement established in the associated Design Instrumentation & Controls Uncertainty and Setpoint Calculation. In order to keep the results of these calculations associated with establishing trip setpoints valid, as-left instrument setting tolerances have been developed in the calculations. The as-left instrument setting tolerances are currently documented in the Plant Protective System (PPS) Bistable Trip Units Functional Test used to fulfill the surveillance requirements associated with the Steam Generator Low Pressure trip setpoint and others listed in Technical Specification Tables 3.3.1-1 and 3.3.5-1.

The requirement to ensure the as-left instrument setting is within the tolerance band of the trip setpoint already exists at Palo Verde and is procedurally controlled. In accordance with the direction in a letter dated March 31, 2005, from the NRC to Mr. Alex Marion, NEI, this footnote is being added to the Technical Specifications for the LSSS being changed by the July 9, 2004 LAR in order for the staff to complete its review.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

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

⁴ TS Bases 3.7.1, Actions

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

Response: No.

The proposed change does not result in any change to safety analysis methods or results, and the proposed change is not the result of a new or changed analysis. The changes to add footnotes in Technical Specification (TS) Tables 3.3.1-1, 3.3.2-1, 3.3.5-1, and 3.7.1-1 ensure that the low steam generator pressure setpoints and the variable overpower trip setpoints, under specified conditions, associated with the Plant Protective System (PPS) are set to protect the safety limit.

The proposed change only ensures that as left setpoints are returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

Adding footnotes to TS Tables 3.3.1-1, 3.3.2-1, 3.3.5-1 and 3.7.1-1 is not a change to the setpoints, operation or accident response of the Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2 and 3 structures, systems, and components. The changes ensure that certain setpoints associated with the PPS are set to protect the safety limit.

The only changes being proposed will ensure that PPS as left set points for low steam generator pressure and variable overpower trip, under specified conditions, are set to protect safety limits. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No.

The proposed change does not result in any change to safety analysis methods or results. Therefore, by adding the footnotes to TS Tables 3.3.1-1, 3.3.2-1, 3.3.5-1 and 3.7.1-1 the margins as established in the PVNGS Units 1, 2 and 3 Technical Specifications and Updated Final Safety Analysis Report (UFSAR) are unchanged.

The proposed change only involves the addition of a footnote to ensure that as left setpoints for low steam generator pressure and variable overpower trip, under specified conditions, are set to protect safety limits. Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel and fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. No actual plant equipment or accident analysis will be affected by the proposed changes. Additionally, the proposed changes will not relax any criteria used to establish safety limits, will not relax any safety system settings, or will not relax the bases for any limiting conditions for operation.

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

Based upon the above, APS concludes that the proposed amendments 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

The footnote ensures compliance with 10 CFR 50.36, Technical Specifications, by requiring that the instrument be returned to the trip set point established to protect the analytical limit (and, therefore, protect the safety limit) at the completion of testing or calibration.

6.0 ENVIRONMENTAL CONSIDERATION

Arizona Public Service Company has evaluated the proposed changes and has determined that the changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

7.0 PRECEDENT

This licensing action request is being submitted in accordance with a letter, dated March 31, 2005 from J. A. Lyons, USNRC, to Mr. Alex Marion, NEI, "Instrumentation, Systems, and Automation Society S67.04 Methods for Determining Trip Setpoints and Allowable Values for Safety-Related Instrumentation."

ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION CHANGE (mark-up)

RPS Instrumentation – Operating (Before CPC Upgrade) 3.3.1

Table 3.3.1-1 (page 1 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Variable Over Power	1.2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9 SR 3.3.1.13	Ceiling \leq 111.0% RTP Band \leq 9.9% RTP Incr. Rate \leq 11.0%/min RTP Decr. Rate $>$ 5%/sec RTP
2. Logarithmic Power Level – High(a)	2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\leq 0.011% NRTP
3. Pressurizer Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 2388 psia
4. Pressurizer Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\geq 1821 psia
5. Containment Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 3.2 psig
6. Steam Generator #1 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	Units 1 and 3 5876 MWT RTP: \geq 890 psia Unit 2 8990 MWT RTP: \geq 965 psia
7. Steam Generator #2 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	Units 1 and 3 5876 MWT RTP: \geq 890 psia Unit 2 8990 MWT RTP: \geq 965 psia

(continued)

(a) Trip may be bypassed when logarithmic power is $>$ 1E-4% NRTP. Bypass shall be automatically removed when logarithmic power is \leq 1E-4% NRTP.

INSERT → (a) THE AS-LEFT INSTRUMENT SETTING SHALL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT ESTABLISHED TO PROTECT THE SAFETY LIMIT.

PALO VERDE UNITS 1 AND 3

AMENDMENT NO. 119, 150

PALO VERDE UNIT 2

3.3.1-8

AMENDMENT NO. 149, 150

RPS Instrumentation – Operating (After CPC Upgrade) 3.3.1

Table 3.3.1-1 (page 1 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Variable Over Power	1.2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9 SR 3.3.1.13	Ceiling \leq 111.0% RTP Band \leq 9.9% RTP Incr. Rate \leq 11.0%/min RTP Decr. Rate $>$ 5%/sec RTP
2. Logarithmic Power Level – High(a)	2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\leq 0.011% NRTP
3. Pressurizer Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 2388 psia
4. Pressurizer Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\geq 1821 psia
5. Containment Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 3.2 psig
6. Steam Generator #1 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	Units 1 and 3 8876 MWT RTP: \geq 890 psia Unit 2 8990 MWT RTP: \geq 955 psia
7. Steam Generator #2 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	Units 1 and 3 8876 MWT RTP: \geq 890 psia Unit 2 8990 MWT RTP: \geq 955 psia

(continued)

(a) Trip may be bypassed when logarithmic power is $>$ 1E-4% NRTP. Bypass shall be automatically removed when logarithmic power is \leq 1E-4% NRTP.

INSERT → (a) THE AS-LEFT INSTRUMENT SETTING SHALL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT ESTABLISHED TO PROTECT THE SAFETY LIMIT.

RPS Instrumentation - Shutdown
3.3.2

Table 3.3.2-1 (PAGE 1 OF 1)
Reactor Protective System Instrumentation - Shutdown

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALVE
1. Logarithmic Power Level-High ^(d)	3 ^(a) , 4 ^(a) , 5 ^(a)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.5	≤ 0.011% NRTP ^(c)
2. Steam Generator #1 Pressure-Low ^(b)	3 ^(a)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	Units 1 and 3 3876 Mwt RTP: ≥ 890 psia Unit 2 3990 Mwt RTP: (e) ≥ 955 psia
3. Steam Generator #2 Pressure-Low ^(b)	3 ^(a)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	Units 1 and 3 3876 Mwt RTP: ≥ 890 psia Unit 2 3990 Mwt RTP: (e) ≥ 955 psia

- (a) With any Reactor Trip Circuit Breakers (RTCBs) closed and any control element assembly capable of being withdrawn.
- (b) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 200 psig. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.
- (c) The setpoint must be reduced to ≤ 1E-4% NRTP when less than 4 RCPs are running.
- (d) Trip may be bypassed when logarithmic power is > 1E-4% NRTP. Bypass shall be automatically removed when logarithmic power is ≤ 1E-4% NRTP.

INSERT (e) THE AS-LIFT INSTRUMENT SETTING SHALL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SET POINT ESTABLISHED TO PROTECT THE SAFETY LIMIT.

Table 3.3.5-1 (page 1 of 1)
Engineered Safety Features Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE
1. Safety Injection Actuation Signal		
a. Containment Pressure – High	1,2,3	≤ 3.2 psig
b. Pressurizer Pressure – Low(a)		≥ 1821 psia
2. Containment Spray Actuation Signal		
a. Containment Pressure – High High	1,2,3	≤ 8.9 psig
3. Containment Isolation Actuation Signal		
a. Containment Pressure – High	1,2,3	≤ 3.2 psig
b. Pressurizer Pressure – Low(a)		≥ 1821 psia
4. Main Steam Isolation Signal(c)		
a. Steam Generator #1 Pressure-Low(b)	1,2,3	3876 Mwt RTP: ≥ 890 psia
b. Steam Generator #2 Pressure-Low(b)		3990 Mwt RTP: ≥ 955 psia ^(d)
c. Steam Generator #1 Level-High		3876 Mwt RTP: ≥ 890 psia
d. Steam Generator #2 Level-High		3990 Mwt RTP: ≥ 955 psia ^(d)
e. Containment Pressure-High		$\leq 91.5\%$
		$\leq 91.5\%$
		≤ 3.2 psig
5. Recirculation Actuation Signal		
a. Refueling Water Storage Tank Level-Low	1,2,3	≥ 6.9 and $\leq 7.9\%$
6. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1)		
a. Steam Generator #1 Level-Low	1,2,3	$\geq 25.3\%$
b. SG Pressure Difference-High		≤ 192 psid
7. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2)		
a. Steam Generator #2 Level-Low	1,2,3	$\geq 25.3\%$
b. SG Pressure Difference-High		≤ 192 psid

- (a) The setpoint may be decreased to a minimum value of 100 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psia or ≥ 140 psia greater than the saturation pressure of the RCS cold leg when the RCS cold leg temperature is $\geq 485^\circ\text{F}$. Trips may be bypassed when pressurizer pressure is < 400 psia. Bypass shall be automatically removed when pressurizer pressure is ≥ 500 psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.
- (b) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 200 psig. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.
- (c) The Main Steam Isolation Signal (MSIS) Function (Steam Generator Pressure – Low, Steam Generator Level-High and Containment Pressure – High signals) is not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed.
- INSERT (d) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

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	MAXIMUM POWER (% RTP)		MAXIMUM ALLOWABLE VARIABLE OVERPOWER TRIP SETPOINT (% RTP)	
	Units 1 and 3 3876 MWt RTP	Unit 2 3990 MWt RTP	Units 1 and 3 3876 MWt RTP	Unit 2 3990 MWt RTP
10	100.0	100.0	111.0	111.0
9	98.2	90.0	108.0	99.7
8	87.3	80.0	97.1	89.7
7	76.4	68.0	86.2	77.7
6	65.5	56.0	75.3	65.7

(w) THE AS-LEFT INSTRUMENT SETTING SHALL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT ESTABLISHED TO PROTECT THE SAFETY LIMIT.

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 3876 MWt RTP	Unit 2 3990 MWt RTP	Units 1 and 3 3876 MWt RTP	Unit 2 3990 MWt RTP
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.

INSERT

(b) THE AS-LEFT INSTRUMENT SETTING SHALL BE RETURNED TO A SETTING
WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT ESTABLISHED TO PROTECT
THE SAFETY LIMIT.

NOTE: MARKED-UP ON PROPOSED MMSV AMENDMENT THAT WAS REQUESTED IN LETTER NO.
102-05043, DATED FEBRUARY 4, 2004.

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION CHANGE (retyped)

RPS Instrumentation – Operating (Before CPC Upgrade)
3.3.1

Table 3.3.1-1 (page 1 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Variable Over Power	1.2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9 SR 3.3.1.13	Ceiling \leq 111.0% RTP Band \leq 9.9% RTP Incr. Rate \leq 11.0%/min RTP Decr. Rate $>$ 5%/sec RTP
2. Logarithmic Power Level – High(a)	2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\leq 0.011% NRTP
3. Pressurizer Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 2388 psia
4. Pressurizer Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\geq 1821 psia
5. Containment Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 3.2 psig
6. Steam Generator #1 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	3876 Mwt RTP: \geq 890 psia 3990 Mwt RTP: \geq 955 psia ^(aa)
7. Steam Generator #2 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	3876 Mwt RTP: \geq 890 psia 3990 Mwt RTP: \geq 955 psia ^(aa)

(continued)

(a) Trip may be bypassed when logarithmic power is $>$ 1E-4% NRTP. Bypass shall be automatically removed when logarithmic power is \leq 1E-4% NRTP.

(aa) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

RPS Instrumentation – Operating (After CPC Upgrade)

3.3.1

Table 3.3.1-1 (page 1 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Variable Over Power	1.2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9 SR 3.3.1.13	Ceiling \leq 111.0% RTP Band \leq 9.9% RTP Incr. Rate \leq 11.0%/min RTP Decr. Rate $>$ 5%/sec RTP
2. Logarithmic Power Level – High(a)	2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\leq 0.011% NRTP
3. Pressurizer Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 2388 psia
4. Pressurizer Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	\geq 1821 psia
5. Containment Pressure – High	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	\leq 3.2 psig
6. Steam Generator #1 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	3876 Mwt RTP: \geq 890 psia 3990 Mwt RTP: \geq 955 psia ^(aa)
7. Steam Generator #2 Pressure – Low	1.2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	3876 Mwt RTP: \geq 890 psia 3990 Mwt RTP: \geq 955 psia ^(aa)

(continued)

(a) Trip may be bypassed when logarithmic power is $>$ 1E-4% NRTP. Bypass shall be automatically removed when logarithmic power is \leq 1E-4% NRTP.

(aa) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

Table 3.3.2-1
Reactor Protective System Instrumentation - Shutdown

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALVE
1. Logarithmic Power Level-High ^(d)	3 ^(a) , 4 ^(a) , 5 ^(a)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.5	≤ 0.011% NRTP ^(c)
2. Steam Generator #1 Pressure-Low ^(b)	3 ^(a)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	3876 Mwt RTP: ≥ 890 psia 3990 Mwt RTP: ≥ 955 psia ^(e)
3. Steam Generator #2 Pressure-Low ^(b)	3 ^(a)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	3876 Mwt RTP: ≥ 890 psia 3990 Mwt RTP: ≥ 955 psia ^(e)

- (a) With any Reactor Trip Circuit Breakers (RTCBs) closed and any control element assembly capable of being withdrawn.
- (b) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 200 psig. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.
- (c) The setpoint must be reduced to ≤ 1E-4% NRTP when less than 4 RCPs are running.
- (d) Trip may be bypassed when logarithmic power is > 1E-4% NRTP. Bypass shall be automatically removed when logarithmic power is ≤ 1E-4% NRTP.
- (e) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

Table 3.3.5-1 (page 1 of 1)
Engineered Safety Features Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE
1. Safety Injection Actuation Signal		
a. Containment Pressure – High	1,2,3	≤ 3.2 psig
b. Pressurizer Pressure – Low(a)		≥ 1821 psia
2. Containment Spray Actuation Signal		
a. Containment Pressure – High High	1,2,3	≤ 8.9 psig
3. Containment Isolation Actuation Signal		
a. Containment Pressure – High	1,2,3	≤ 3.2 psig
b. Pressurizer Pressure – Low(a)		≥ 1821 psia
4. Main Steam Isolation Signal(c)		
a. Steam Generator #1 Pressure–Low(b)	1,2,3	3876 Mwt RTP: ≥ 890 psia
b. Steam Generator #2 Pressure–Low(b)		3990 Mwt RTP: ≥ 955 psia ^(d)
c. Steam Generator #1 Level-High		3876 Mwt RTP: ≥ 890 psia
d. Steam Generator #2 Level-High		3990 Mwt RTP: ≥ 955 psia ^(d)
e. Containment Pressure-High		$\leq 91.5\%$
		$\leq 91.5\%$
		≤ 3.2 psig
5. Recirculation Actuation Signal		
a. Refueling Water Storage Tank Level–Low	1,2,3	≥ 6.9 and $\leq 7.9\%$
6. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1)		
a. Steam Generator #1 Level–Low	1,2,3	$\geq 25.3\%$
b. SG Pressure Difference–High		≤ 192 psid
7. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2)		
a. Steam Generator #2 Level–Low	1,2,3	$\geq 25.3\%$
b. SG Pressure Difference–High		≤ 192 psid

- (a) The setpoint may be decreased to a minimum value of 100 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psia or ≥ 140 psia greater than the saturation pressure of the RCS cold leg when the RCS cold leg temperature is $\geq 485^\circ\text{F}$. Trips may be bypassed when pressurizer pressure is < 400 psia. Bypass shall be automatically removed when pressurizer pressure is ≥ 500 psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.
- (b) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 200 psig. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.
- (c) The Main Steam Isolation Signal (MSIS) Function (Steam Generator Pressure – Low, Steam Generator Level-High and Containment Pressure – High signals) is not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed.
- (d) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

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	MAXIMUM POWER (% RTP)		MAXIMUM ALLOWABLE VARIABLE OVERPOWER TRIP SETPOINT (% RTP)	
	3876 Mwt RTP	3990 Mwt RTP	3876 Mwt RTP	3990 Mwt RTP ^(a)
10	100.0	100.0	111.0	111.0
9	98.2	90.0	108.0	99.7
8	87.3	80.0	97.1	89.7
7	76.4	68.0	86.2	77.7
6	65.5	56.0	75.3	65.7

- (a) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

ATTACHMENT 3

CHANGES TO TS BASES PAGES (for information only)

BASES

LCO
(continued)

5. Containment Pressure - High

The LCO requires four channels of Containment Pressure - High to be OPERABLE in MODES 1 and 2.

The Allowable Value is set high enough to allow for small pressure increases in containment expected during normal operation (i.e., plant heatup) and is not indicative of an abnormal condition. It is set low enough to initiate a reactor trip when an abnormal condition is indicated.

6. 7. Steam Generator Pressure - Low

This LCO requires four channels of Steam Generator #1 Pressure - Low and Steam Generator #2 Pressure - Low to be OPERABLE in MODES 1 and 2.

This Allowable Value is sufficiently below the full load operating value for steam pressure so as not to interfere with normal plant operation, but still high enough to provide the required protection in the event of excessive steam demand. Since excessive steam demand causes the RCS to cool down, resulting in positive reactivity addition to the core. If the moderator temperature coefficient is negative a reactor trip is required to offset that effect.

The trip setpoint may be manually decreased as steam generator pressure is reduced during controlled plant cooldown, provided the margin between steam generator pressure and the setpoint is maintained ≤ 200 psia. This allows for controlled depressurization of the secondary system while still maintaining an active reactor trip setpoint and MSIS setpoint, until the time is reached when the setpoints are no longer needed to protect the plant. The setpoint increases automatically as steam generator pressure increases until the specified trip setpoint is reached.

Steam Generator Level - Low

This LCO requires four channels of Steam Generator #1 Level - Low and Steam Generator #2 Level - Low for each steam generator to be OPERABLE in MODES 1 and 2. The Allowable Value is sufficiently below the normal operating level for the steam generators so as not to

(continued)

FOOTNOTE (QW) WILL ENSURE THAT THE AS-LEFT INSTRUMENT SETTING WILL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT THAT HAS 8, 9% BAND ESTABLISHED TO PROTECT THE SAFETY LIMIT

BASES

LCO
(continued)

that removes power from the CEDMs may be used. The CEAs are still capable of withdrawal if the CEDMCS withdrawal circuits are disabled with power applied to the CEDMs because failures in the CEDMCS could result in CEA withdrawal.

FOOTNOTE (E) WILL ENSURE THAT THE AS-LEFT INSTRUMENT SETTING WILL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT THAT HAS BEEN ESTABLISHED TO PROTECT THE SAFETY LIMIT

This LCO requires all four channels of Steam Generator #1 Pressure-Low, and Steam Generator #2 Pressure-Low, to be OPERABLE in MODE 3, when the RTCBs are closed and the CEA Drive System is capable of CEA withdrawal. These RPS functions are not required in MODES 4 and 5 because the Steam Generator temperature is low, therefore the energy release and resulting cooldown following a large MSLB in MODES 4 and 5 is not significant. A

The Allowable Values are high enough to provide an operating envelope that prevents unnecessary Logarithmic Power Level – High reactor trips during normal plant operations. The Allowable Values are low enough for the system to maintain a safety margin for unacceptable fuel cladding damage should a CEA withdrawal or MSLB event occur.

The Logarithmic Power Level – High trip may be bypassed when logarithmic power is above 1E-4% NRTP to allow the reactor to be brought to power during a reactor startup. This bypass is automatically removed when logarithmic power decreases below 1E-4% NRTP. Above 1E-4% NRTP, the Variable Over Power – High and Pressurizer Pressure – High trips provide protection for reactivity transients.

The automatic bypass removal channel is INOPERABLE when the associated Log power channel has failed. The bypass function is manually controlled via station operating procedures and the bypass removal circuitry itself is fully capable of responding to a change in the associated input bistable. Footnotes (a) and (b) in Table 3.3.1-1 and (d) in Table 3.3.2-1 clearly require an "automatic" removal of trip bypasses. A failed Log channel may prevent, depending on the failure mode, the associated input bistable from changing state as power transitions through the automatic bypass removal setpoint. Specifically, when the indicated Log power channel is failed high (above 1E-4%), the automatic Hi-Log power trip bypass removal feature in that channel cannot function. Similarly, when the indicated Log power channel is failed low (below 1E-4%), the automatic DNBR-LPD trip bypass removal feature in that channel cannot function. Although one bypass removal feature is applicable above 1E-4% NRTP and the other is applicable below 1E-4% NRTP, both are affected by a failed Log power channel and should therefore be considered INOPERABLE.

(continued)

BASES

LCO

FOOTNOTE (2) WILL ENSURE THAT THE AS-LEFT INSTRUMENT SETTING WILL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT THAT HAS BEEN ESTABLISHED TO PROTECT THE SAFETY LIMIT

a. Steam Generator Pressure - Low (continued)

The Steam Generator Pressure-Low trip setpoint may be manually decreased as steam generator pressure is reduced. This prevents an RPS trip or MSIS actuation during controlled plant cooldown. The margin between actual steam generator pressure and the trip setpoint must be maintained less than or equal to the specified value of 200 psia to ensure a reactor trip and MSIS will occur when required.

b. Containment Pressure-High

This LCO requires four channels of Containment Pressure-High to be OPERABLE in MODES 1, 2 and 3. The Containment Pressure-High signal is shared among the SIAS (Function 1), CIAS (Function 3), and MSIS (Function 4).

The Allowable Value for this trip is set high enough to allow for small pressure increases in containment expected during normal operation (i.e., plant heatup) and is not indicative of an abnormal condition. The setting is low enough to initiate the ESF Functions when an abnormal condition is indicated. This allows the ESF systems to perform as expected in the accident analyses to mitigate the consequences of the analyzed accidents.

c. Steam Generator Level-High

This LCO requires four channels of Steam Generator Level-High to be OPERABLE in MODES 1, 2 and 3.

The allowable value for this trip is set high enough to ensure it does not interfere with normal plant operation. The setting is low enough to prevent moisture damage to secondary plant components in the case of a steam generator overfill event.

(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.

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

LCO

FOOTNOTE (a) WILL ENSURE THAT THE AS-LEFT REACTOR PROTECTION SYSTEM INSTRUMENT SETTINGS WILL BE RETURNED TO A SETTING WITHIN THE TOLERANCE BAND OF THE TRIP SETPOINT THAT HAS BEEN ESTABLISHED TO PROTECT THE SAFETY LIMIT

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. These limitations are according to those shown in Table 3.7.1-1 and Required Action A.2 in the accompanying LCO. 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.

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.

(continued)