# CONTROLLED BY USER

## SAFETY LIMITS AND LIMITING SAFETY SYSTEMS SETTINGS

BASES

#### DNBR - Low (Continued)

The DNBR, the trip variable, calculated by the CPC incorporates various uncertainties and dynamic compensation routines to assure a trip is initiated prior to violation of fuel design limits. These uncertainties and dynamic compensation routines ensure that a reactor trip occurs when the calculated core DNBR is sufficiently greater than 1.24 such that the decrease in calculated core DNBR after the trip will not result in a violation of the DNBR Safety Limit. CPC uncertainties related to DNBR cover CPC input measurement uncertainties, algorithm modelling uncertainties, and computer equipment processing uncertainties. Dynamic compensation is provided in the CPC calculations for the effects of coolant transport delays, core heat flux delays (relative to changes in core power), sensor time delays, and protection system equipment time delays.

The DNBR algorithm used in the CPC is valid only within the limits indicated below and operation outside of these limits will result in a CPC initiated trip.

Parameter	Limiting Value
<ul> <li>a. RCS Cold Leg Temperature-Le</li> <li>b. RCS Cold Leg Temperature-H</li> <li>c. Axial Shape Index-Positive</li> <li>d. Axial Shape Index-Negative</li> <li>e. Pressurizer Pressure-Low</li> <li>f. Pressurizer Pressure-High</li> <li>g. Integrated Radial Peaking Factor-Low</li> <li>h. Integrated Radial Peaking Factor-High</li> <li>i. Quality Margin-Low</li> </ul>	by $\geq 470^{\circ}F$ igh $\leq 610^{\circ}F$ Not more positive than + 0.5 Not more negative than - 0.5 $\geq 1860$ psia $\leq 2388$ psia $\geq 1.28$ $\leq 4.28$ $\leq 4.28$ $\leq 7.00$
Generator Level - High	· · · · · · · · · · · · · · · · · · ·

The Steam Generator Level - High trip is provided to protect the turbine from excessive moisture carry over. Since the turbine is automatically tripped when the reactor is tripped, this trip provides a reliable means for providing protection to the turbine from excesssive moisture carryover. This trip's setpoint does not correspond to a safety limit, and provides protection in the event of excess feedwater flow. The setpoint is identical to the main steam isolation setpoint. Its functional capability at the specified trip setting enhances the overall reliability of the reactor protection system.

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PALO VERDE - UNIT 1

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SAFETY LIMITS AND LIMITING SAFETY SYSTEMS SETTINGS

#### BASES

#### DNBR - Low (Continued)

The DNBR, the trip variable, calculated by the CPC incorporates various uncertainties and dynamic compensation routines to assure a trip is initiated prior to violation of fuel design limits. These uncertainties and dynamic compensation routines ensure that a reactor trip occurs when the calculated core DNBR is sufficiently greater than 1.24 such that the decrease in calculated core DNBR after the trip will not result in a violation of the DNBR Safety Limit. CPC uncertainties related to DNBR cover CPC input measurement uncertainties, algorithm modelling uncertainties, and computer equipment processing uncertainties. Dynamic compensation is provided in the CPC calculations for the effects of coolant transport delays, core heat flux delays (relative to changes in core power), sensor time delays, and protection system equipment time delays.

The DNBR algorithm used in the CPC is valid only within the limits indicated below and operation outside of these limits will result in a CPC initiated trip.

#### Parameter

- a. RCS Cold Leg Temperature-Low
- b. RCS Cold Leg Temperature-High
- c. Axial Shape Index-Positive
- d. Axial Shape Index-Negative
- e. Pressurizer Pressure-Low
- f. Pressurizer Pressure-High g. Integrated Radial Peaking
- Factor-Low
   Integrated Radial Peaking
- Factor-High
- i. Quality Margin-Low

#### Steam Generator Level - High

Limiting Value > 470°F

> 470 F
< 610°F
Not more positive than + 0.5
Not more negative than - 0.5
> 1860 psia
< 2388 psia</pre>

$$\geq 1.28$$

$$\leq 4.28$$

$$\leq 4.28$$

$$\leq 7.00$$

The Steam Generator Level - High trip is provided to protect the turbine from excessive moisture carry over. Since the turbine is automatically tripped when the reactor is tripped, this trip provides a reliable means for providing protection to the turbine from excesssive moisture carryover. This trip's setpoint does not correspond to a safety limit, and provides protection in the event of excess feedwater flow. The setpoint is identical to the main steam isolation setpoint. Its functional capability at the specified trip setting enhances the overall reliability of the reactor protection system.

#### PALO VERDE - UNIT 2

### AMENDMENT NO. 19



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