Palo Verde Nuclear Generating Station
Adoption of TSTF-487-A to Relocate DNB Parameter Limits to the COLR

Pre-Submittal Meeting with the NRC
April 6, 2022

PaloVerde™
GENERATING STATION

Agenda

- Description
- Proposed Technical Specification (TS) Changes
- Conforming TS Bases Changes
- Precedents
- Submittal Timeline

Description

- Technical Specification Task Force (TSTF)-487-A relocates Reactor Coolant System (RCS) Departure from Nucleate Boiling (DNB) parameters from the TS to the Core Operating Limits Report (COLR)
- Parameters include RCS pressure, temperature, and total flow rate
- Changes are consistent with the Standard Technical Specifications (NUREG-1432, Rev. 5) and no changes are made to the actual limits
- Submittal will be consistent with the model application in the federal register (72 FR 31108)

Proposed TS Changes

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified ~~below~~: in the COLR.

~~a. Pressurizer pressure ≥ 2130 psia and ≤ 2295 psia; and~~

~~b. RCS cold leg temperature (T_c) shall be within the area of acceptable operation shown in Figure 3.4.1-1; and~~

~~c. RCS total flow rate ≥ 155.8 E6 lbm/hour.~~

Proposed TS Changes

SURVEILLANCE REQUIREMENTS

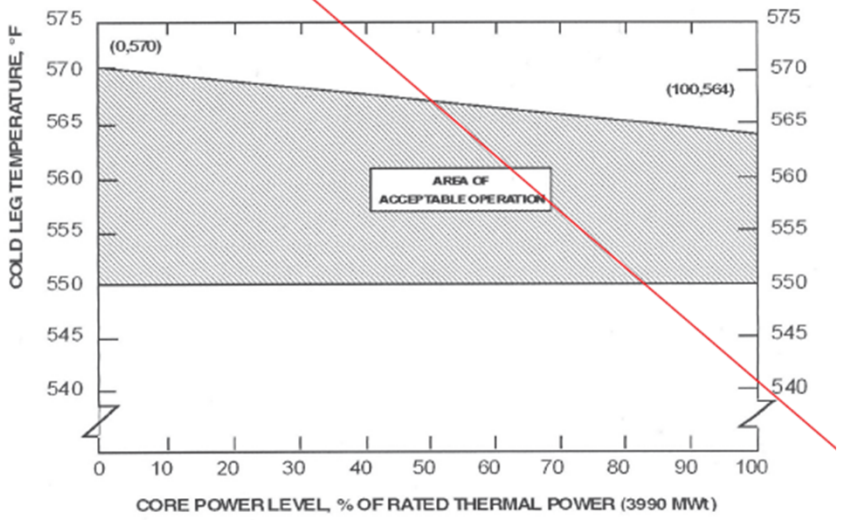
	SURVEILLANCE	FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure ~~≥ 2130 psia and ≤ 2295 psia.~~ is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.2	Verify RCS cold leg temperature ~~within limits as shown in Figure 3.4.1-1.~~ is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.3	----------NOTE---------- Required to be met in MODE 1 with all RCPs running. ---------- Verify RCS total flow rate ~~≥ 155.8 E6 lbm/hour.~~ is greater than or equal to the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

Proposed TS Changes

- Remove Figure 3.4.1-1, Reactor Coolant Cold Leg Temperature vs Core Power Level

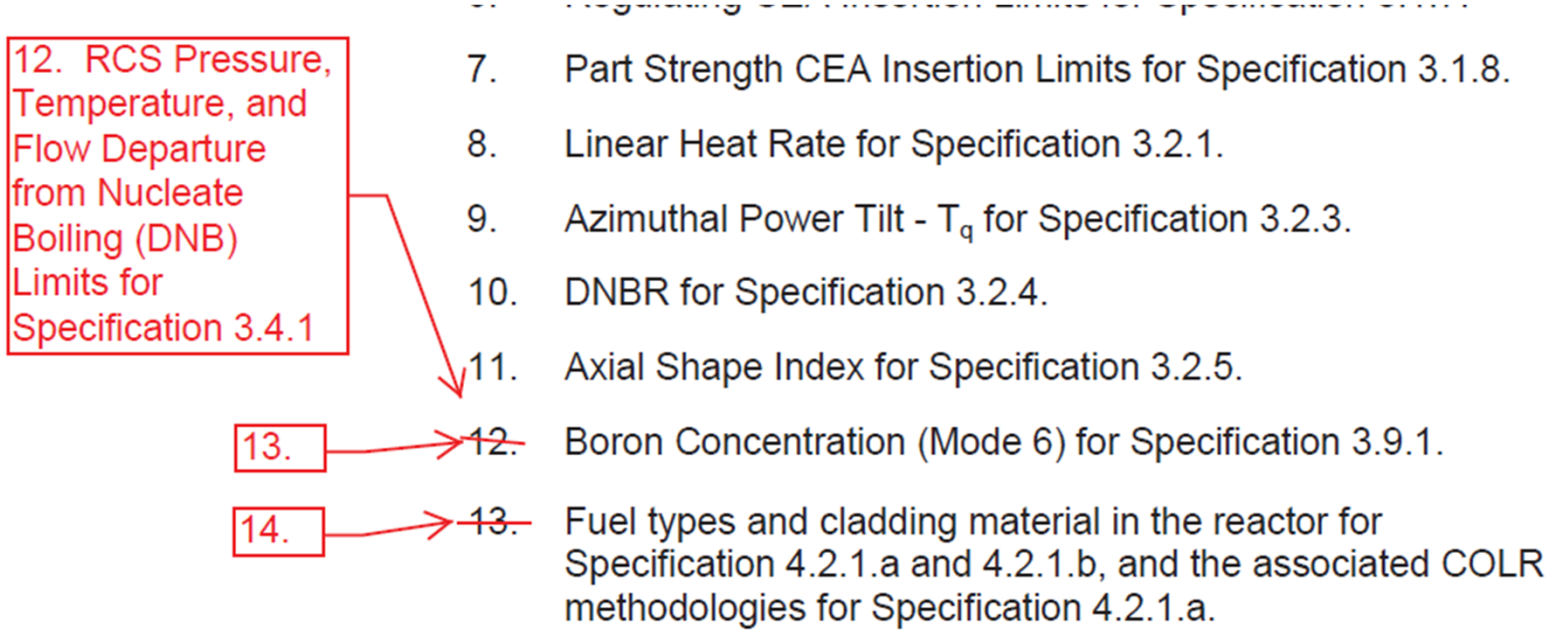
Figure 3.4.1-1

Reactor Coolant Cold Leg Temperature vs. Core Power Level



Proposed TS Changes

New item added for TS 5.6.5, paragraph a, to add the methodology requirements for calculating the DNB numerical limits in the COLR.



Proposed TS Changes

TS 5.6.5, paragraph c, is modified to clarify that the COLR limits must be determined assuming that the plant is capable of operating at the Rated Thermal Power specified in Section 1.1, Definitions.

5.6 Reporting Requirements

5.6.5 Core Operating Limits Report (COLR) (continued)

assuming operation up to RATED THERMAL POWER

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any mid cycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

Conforming TS Bases Changes

that the core power distribution is within the limits of LCO 3.1.7, "Regulating CEA Insertion Limits"; LCO 3.1.8, Part Strength CEA Insertion Limits"; LCO 3.2.3, "AZIMUTHAL POWER TILT (T_q)"; and LCO 3.2.5, "AXIAL SHAPE INDEX (ASI).

The RCS DNB limits satisfy Criterion 2 of 10 CFR 50.56(c)(2)(ii).

LCO

This LCO specifies limits on the monitored process variables - RCS pressurizer pressure, RCS cold leg temperature, and RCS total flow rate - to ensure that the core operates within the limits assumed for the plant saf analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

The LCO numerical ~~value for minimum flow rate is given for the measurement location but has~~ not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of minimum flow rate.

These variables are contained in the COLR to provide operating and analysis flexibility from cycle to cycle.

values for pressure, temperature, and flow rate specified in the COLR are given for the measurement location but have

Precedents

- San Onofre Units 2 and 3, License Amendment 219, dated February 3, 2009 (ML083470091)
- Calvert Cliff Units 1 and 2, License Amendments 301 and 278, respectively, dated January 11, 2012 (ML113410461)

Submittal Timeline

- Submittal planned for mid-April
- Requesting 9-month NRC review period
- Requesting a 6-month implementation period
    - Implementation includes COLR revisions submitted to the NRC, as required per TS 5.6.5.d

Questions