

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

In MODES 1 and 2, the combination of THERMAL POWER, Reactor Coolant System (RCS) highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the COLR; and the following SLs shall not be exceeded:

2.1.1.1 The departure from nucleate boiling ratio (DNBR) shall be maintained ≥ 1.23 for the WRB-2 DNB correlation, and ≥ 1.30 for the W-3 DNB correlation.

2.1.1.2 The peak centerline temperature shall be maintained ≤ 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU of burnup.

2.1.2 RCS Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained ≤ 2735 psig.

2.2 SL Violations

2.2.1 If SL 2.1.1 is violated, restore compliance and be in MODE 3 within 1 hour.

2.2.2 If SL 2.1.2 is violated:

2.2.2.1 In MODE 1 or 2, restore compliance and be in MODE 3 within 1 hour.

2.2.2.2 In MODE 3, 4, or 5, restore compliance within 5 minutes.

Table 3.3.1-1 (page 5 of 6)
Reactor Trip System Instrumentation

Note 1: Overtemperature ΔT

The Overtemperature ΔT Function Allowable Value shall not exceed the following Trip Setpoint by more than 1.3% of ΔT span.

$$\Delta T \frac{(1 + \tau_1 s)}{(1 + \tau_2 s)} \left(\frac{1}{1 + \tau_3 s} \right) \leq \Delta T_o \left\{ K_1 - K_2 \frac{(1 + \tau_4 s)}{(1 + \tau_5 s)} \left[T \left(\frac{1}{(1 + \tau_6 s)} \right) - T' \right] + K_3 (P - P') - f_1(\Delta I) \right\}$$

Where: ΔT is measured RCS ΔT , °F.

ΔT_o is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1} .

T is the measured RCS average temperature, °F.

T' is the nominal T_{avg} at RTP, \leq *.

P is the measured pressurizer pressure, psig.

P' is the nominal RCS operating pressure \geq * psig.

$K_1 = *$

$K_2 = */^\circ\text{F}$

$K_3 = */\text{psig}$

$\tau_1 = * \text{ sec}$

$\tau_2 = * \text{ sec}$

$\tau_3 = * \text{ sec}$

$\tau_4 = * \text{ sec}$

$\tau_5 = * \text{ sec}$

$\tau_6 = * \text{ sec}$

$f_1(\Delta I) =$ * { * % + $(q_t - q_b)$ }
0% of RTP
* { $(q_t - q_b) - * \%$ }

when $q_t - q_b < * \%$ RTP
when * % RTP $\leq q_t - q_b \leq * \%$ RTP
when $q_t - q_b > * \%$ RTP

where q_t and q_b are percent RTP in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

The values denoted with * are specified in the COLR.

Table 3.3.1-1 (page 6 of 6)
Reactor Trip System Instrumentation

Note 2: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following Trip Setpoint by more than 2.6% of ΔT span.

$$\Delta T \frac{(1 + \tau_1 s)}{(1 + \tau_2 s)} \left(\frac{1}{1 + \tau_3 s} \right) \leq \Delta T_0 \left\{ K_4 - K_5 \frac{(\tau_7 s)}{(1 + \tau_7 s)} \left(\frac{1}{1 + \tau_6 s} \right) T - K_6 \left[T \frac{1}{(1 + \tau_6 s)} - T'' \right] - f_2(\Delta I) \right\}$$

Where: ΔT is measured RCS ΔT , °F.

ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1} .

T is the measured RCS average temperature, °F.

T'' is the indicated T_{avg} at RTP (Calibration temperature for ΔT instrumentation), \leq * °F.

$K_4 = *$	$K_5 = *$ /°F for increasing T_{avg} * /°F for decreasing T_{avg}	$K_6 = *$ /°F when $T > T''$ * /°F when $T \leq T''$
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$\tau_1 = *$ sec	$\tau_2 = *$ sec	$\tau_3 = *$ sec
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$\tau_6 = *$ sec	$\tau_7 = *$ sec
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$f_2(\Delta I) = *$

The values denoted with * are specified in the COLR.

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, RCS average temperature, and RCS total flow rate shall be within the limits specified below:

- a. Pressurizer pressure is greater than or equal to the limit specified in the COLR;
- b. RCS average temperature is less than or equal to the limit specified in the COLR; and
- c. RCS total flow rate $\geq 37.1 \times 10^4$ gpm and greater than or equal to the limit specified in the COLR.

APPLICABILITY: MODE 1.

-----NOTE-----

Pressurizer pressure limit does not apply during :

- a. THERMAL POWER ramp > 5% RTP per minute; or
- b. THERMAL POWER step > 10% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Not applicable to RCS total flow rate. -----</p> <p>One or more RCS DNB parameters not within limits.</p>	<p>A.1 Restore RCS DNB parameter(s) to within limit.</p>	<p>2 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. -----NOTE----- Required Action B.2 must be completed whenever Condition B is entered. -----</p> <p>RCS flow rate not within limits.</p>	<p>B.1.1 Restore RCS flow rate to within limits.</p> <p><u>OR</u></p> <p>B.1.2.1 Reduce THERMAL POWER to < 50% RTP.</p> <p><u>AND</u></p> <p>B.1.2.2 Reduce Power Range Neutron Flux - High trip setpoints to ≤ 55% RTP.</p> <p><u>AND</u></p> <p>B.1.2.3 Reduce THERMAL POWER to < 5% RTP.</p> <p><u>AND</u></p>	<p>2 hours</p> <p>2 hours</p> <p>6 hours</p> <p>74 hours</p> <p>(continued)</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.2</p> <p style="text-align: center;">-----NOTE-----</p> <p>THERMAL POWER does not have to be reduced to comply with this Required Action.</p> <p style="text-align: center;">-----</p> <p>Perform SR 3.4.1.3.</p>	<p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>24 hours after THERMAL POWER reaching \geq 95% RTP</p>
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.1.1 Verify pressurizer pressure is greater than or equal to the limit specified in the COLR.	12 hours

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.1.2	Verify RCS average temperature is less than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.3	Verify RCS total flow rate is $\geq 3.71 \times 10^4$ gpm and greater than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.4	<p style="text-align: center;">-----NOTE-----</p> <p>Not required to be performed until 7 days after $\geq 95\%$ RTP.</p> <hr/> <p>Verify by precision heat balance that RCS total flow rate is $\geq 37.1 \times 10^4$ gpm and greater than or equal to the limit specified in the COLR.</p>	18 months

5.6 Reporting Requirements (continued)

5.6.3 Radioactive Effluent Release Report

The Radioactive Effluent Release Report covering the operation of the unit during the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

5.6.4 Monthly Operating Reports

Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report.

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
1. Specification 3.1.3: Moderator Temperature Coefficient (MTC),
 2. Specification 3.1.5: Shutdown Bank Insertion Limits,
 3. Specification 3.1.6: Control Bank Insertion Limits,
 4. Specification 3.2.3: Axial Flux Difference,
 5. Specification 3.2.1: Heat Flux Hot Channel Factor, $F_Q(Z)$,
 6. Specification 3.2.2: Nuclear Enthalpy Rise Hot Channel Factor ($F_{\Delta H}^N$),
 7. Specification 3.9.1: Boron Concentration,
 8. SHUTDOWN MARGIN for Specification 3.1.1 and 3.1.4, 3.1.5, 3.1.6, and 3.1.8,
 9. Specification 3.3.1: Overtemperature ΔT and Overpower ΔT Trip Setpoints,

(continued)

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

10. Specification 3.4.1: Reactor Coolant System pressure, temperature, and flow DNB limits, and
 11. Specification 2.1.1: Reactor Core Safety Limits.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
1. WCNOC Topical Report TR 90-0025 W01, "Core Thermal Hydraulic Analysis Methodology for the Wolf Creek Generating Station."
 2. WCAP-11397-P-A, "Revised Thermal Design Procedure."
 3. WCNOC Topical Report NSAG-006, "Transient Analysis Methodology for the Wolf Creek Generating Station."
 4. WCAP-10216-P-A, "Relaxation of Constant Axial Offset Control - F_Q Surveillance Technical Specification."
 5. WCNOC Topical Report NSAG-007, "Reload Safety Evaluation Methodology for the Wolf Creek Generating Station."
 6. NRC Safety Evaluation Report dated March 30, 1993, for the "Revision to Technical Specification for Cycle 7."
 7. WCAP-10266-P-A, "The 1981 Version of the Westinghouse ECCS Evaluation Model Using the BASH Code."
 8. WCAP-11596-P-A, "Qualification of the Phoenix-P/ANC Nuclear Design System for Pressurized Water Reactor Cores."

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5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

9. WCAP 10965-P-A, "ANC: A Westinghouse Advanced Nodal Computer Code."
 10. WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report."
 11. WCAP-8745-P-A, "Design Bases for the Thermal Power ΔT and Thermal Overtemperature ΔT Trip Functions."
- 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 midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

- a. RCS pressure and temperature limits for heat up, cooldown, low temperature operation, criticality, hydrostatic testing, and PORV lift settings as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:
1. Specification 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and
 2. Specification 3.4.12, "Low Temperature Overpressure Protection System."
- b. The analytical methods used to determine the RCS pressure and temperature and Cold Overpressure Mitigation System limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

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5.6 Reporting Requirements

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) (continued)

1. NRC letter dated December 2, 1999, "Wolf Creek Generating Station, Acceptance for Referencing of Pressure Temperature Limits Report (TAC No. MA4572)," and
 2. WCAP-14040-NP-A, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves," January, 1996.
- c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 Not Used.

5.6.8 PAM Report

When a report is required by Condition B or G of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.9 Not Used.

5.6.10 Steam Generator Tube Inspection Report

- a. Within 15 days following the completion of each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission.
- b. The complete results of the steam generator tube inservice inspection shall be submitted to the Commission in a report within 12 months following completion of the inspection. This Special Report shall include:
 - 1) Number and extent of tubes inspected,

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