Industry/TSTF Standard Technical Specification Change Traveler

P/T SRs during single loop operation

Classification: 1) Correct Specifications

NUREGs Affected: ☐ 1430 ☐ 1431 ☐ 1432 ☑ 1433 ☑ 1434

Description:

Add two new SRs (SRs 3.4.[10/11].5 and 6) to P/T Limits Specification applicable during single loop operations; renumber following SRs

Justification:

ISTS SRs 3.4.[10/11].3 and 4 provide P/T limitations for starting a idle recirculation loop. However, when in single recirculation loop operations, flow increases and/or power increases can result in similar concerns for P/T stresses, but no limitations are provided. The limitations of the proposed SRs for flow and/or power increases are analogous to the limitations imposed for the more severe thermal transient of starting an idle pump. These limitations have been recommended by GE and are imposed in several licensee's TS. These limits were located in the CTS Specification for recirculation loops operating but are more appropriately located in the Specification for Pressure and Temperature limits. This location for these SRs results in applying the appropriate Actions, and is consistent with the application of the analogous SRs for idle recirculation loop startup.

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Revision History

OG Revision 0 Revision Status: Active Next Action: NRC

Revision Proposed by: Fermi

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 01-Jul-99

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 01-Jul-99

TSTF Review Information

TSTF Received Date: 15-Jul-99 Date Distributed for Review 16-Jul-99

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved Date: 30-Jul-99

NRC Review Information

NRC Received Date: 02-Aug-99

OG Revision 0 **Revision Status: Active** **Next Action: NRC**

NRC Comments:
(No Comments)

Final Resolution: NRC Action Pending Final Resolution Date:

Incorporation Into the NUREGs

File to BBS/LAN Date: TSTF Informed Date: TSTF Approved Date:

NUREG Rev Incorporated:

Affected Technical Specifications

Ref. 3.4.10 Bases	RCS P/T Limits		NUREG(s)- 1433 Only
SR 3.4.10.5	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	Renamed SR 3.4.10.7	
SR 3.4.10.5	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	New SR	
SR 3.4.10.5 Bases	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	New SR	
SR 3.4.10.5 Bases	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	Renamed SR 3.4.10.7	
SR 3.4.10.6	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	New SR	
SR 3.4.10.6	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	Renamed SR 3.4.10.8	
SR 3.4.10.6 Bases	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	New SR	
SR 3.4.10.6 Bases	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	Renamed SR 3.4.10.8	
SR 3.4.10.7	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	Renamed SR 3.4.10.9	
SR 3.4.10.7 Bases	RCS P/T Limits		NUREG(s)- 1433 Only
	Change Description:	Renamed SR 3.4.10.9	
Ref. 3.4.11 Bases	RCS P/T Limits		NUREG(s)- 1434 Only
SR 3.4.11.5	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	Renamed 3.4.11.7	
SR 3.4.11.5	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	New SR	

SR 3.4.11.5 Bases	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	New SR	
SR 3.4.11.5 Bases	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	Renamed 3.4.11.7	
SR 3.4.11.6	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	New SR	
SR 3.4.11.6	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	Renamed 3.4.11.8	
SR 3.4.11.6 Bases	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	New SR	
SR 3.4.11.6 Bases	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	Renamed 3.4.11.8	
SR 3.4.11.7	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	Renamed 3.4.11.9	
SR 3.4.11.7 Bases	RCS P/T Limits		NUREG(s)- 1434 Only
	Change Description:	Renamed 3.4.11.9	

INSERT

TSTF 353, Rev. 0

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.[10].5 ----------NOTE---------- Only required to be met during a THERMAL POWER increase or recirculation flow increase in MODES 1 and 2 with one idle recirculation loop when [THERMAL POWER is ≤ 30% RTP or when operating loop flow is ≤ 50% rated loop flow]. ---------- Verify the difference between the bottom head coolant temperature and the RPV coolant temperature is [≤ 145°F].	Once within 15 minutes prior to a THERMAL POWER increase or recirculation flow increase
SR 3.4.[10].6 ----------NOTE---------- Only required to be met during a THERMAL POWER increase or recirculation flow increase in MODES 1 and 2 with one non-isolated idle recirculation loop when [THERMAL POWER is ≤ 30% RTP or when operating loop flow is ≤ 50% rated loop flow]. ---------- Verify the difference between the reactor coolant temperature in the idle recirculation loop and the RPV coolant temperature is [≤ 50°F].	Once within 15 minutes prior to a THERMAL POWER increase or recirculation flow increase

Insert Bases -- 1

Limiting differential temperatures within the applicable limits during a THERMAL POWER increase or recirculation flow increase in single loop operation, while THERMAL POWER ≤ 30% RTP or operating loop flow ≤ 50% of rated loop flow, ensure that resulting thermal stresses will not exceed design allowances.

Performing the Surveillance within 15 minutes before starting the idle recirculation pump, THERMAL POWER increase during single loop operation, or recirculation flow increase during single loop operation, provides adequate assurance that the limits will not be exceeded between the time of the Surveillance and the time of the idle pump start, power increase, or flow increase.

Insert Bases -- 2

... for SRs 3.4.[10].3 and 3.4.[10].4 in MODE 5. In MODES 3, 4, and 5, THERMAL POWER increases are not possible, and recirculation flow increases will not result in additional stresses. Therefore ΔT limits are only required for SRs 3.4.[10].5 and 3.4.[10].6 in MODES 1 and 2. The Notes also state that the SR is only required to be met during the event of concern (e.g. pump startup, power increase or flow increase) since this is when the stresses occur.

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.10.3	----------NOTE---------- Only required to be met in MODES 1, 2, 3, and 4 [with reactor steam dome pressure ≥ 25 psig]. ---------- Verify the difference between the bottom head coolant temperature and the reactor pressure vessel (RPV) coolant temperature is within the limits specified in the PTLR.	Once within 15 minutes prior to each startup of a recirculation pump
SR 3.4.10.4	----------NOTE---------- Only required to be met in MODES 1, 2, 3, and 4. ---------- Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is within the limits specified in the PTLR.	Once within 15 minutes prior to each startup of a recirculation pump
SR 3.4.10.5 [7]	----------NOTE---------- Only required to be performed when tensioning the reactor vessel head bolting studs. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes

INSERT → [→]

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.10.6 [8] ----------NOTE---------- Not required to be performed until 30 minutes after RCS temperature ≤ 80°F in MODE 4. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes
SR 3.4.10.7 [9] ----------NOTE---------- Not required to be performed until 12 hours after RCS temperature ≤ 100°F in MODE 4. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.10.2

A separate limit is used when the reactor is approaching criticality. Consequently, the RCS pressure and temperature must be verified within the appropriate limits before withdrawing control rods that will make the reactor critical.

Performing the Surveillance within 15 minutes before control rod withdrawal for the purpose of achieving criticality provides adequate assurance that the limits will not be exceeded between the time of the Surveillance and the time of the control rod withdrawal.

[5]

SR 3.4.10.3 [and] SR 3.4.10.4 [, SR 3.4.10.5, and SR 3.4.10.6]

Differential temperatures within the applicable PTLR limits ensure that thermal stresses resulting from the startup of an idle recirculation pump will not exceed design allowances. [In addition, compliance with these limits ensures that the assumptions of the analysis for the startup of an idle recirculation loop (Ref. 8) are satisfied.]

[Performing the Surveillance within 15 minutes before starting the idle recirculation pump provides adequate assurance that the limits will not be exceeded between the time of the Surveillance and the time of the idle pump start.]

INSERT 1 →

[ ]

An acceptable means of demonstrating compliance with the temperature differential requirement in SR 3.4.10.4 is to compare the temperatures of the operating recirculation loop and the idle loop.

[These SRs have] [Notes] [and SR 3.4.10.6]

[SR 3.4.10.3 has been modified by a Note that requires the Surveillance to be performed only in MODES 1, 2, 3, and 4 [certain MODES] with reactor steam dome pressure ≥ 25 psig. In MODE 5, the overall stress on limiting components is lower. Therefore, ΔT limits are not required.] [ ]

INSERT 2 →

[7] [8] [9]

SR 3.4.10.5, SR 3.4.10.6, and SR 3.4.10.7

Limits on the reactor vessel flange and head flange temperatures are generally bounded by the other P/T limits

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.10.[7], SR 3.4.10.[8], and SR 3.4.10.[9] (continued)

during system heatup and cooldown. However, operations approaching MODE 4 from MODE 5 and in MODE 4 with RCS temperature less than or equal to certain specified values require assurance that these temperatures meet the LCO limits.

The flange temperatures must be verified to be above the limits 30 minutes before and while tensioning the vessel head bolting studs to ensure that once the head is tensioned the limits are satisfied. When in MODE 4 with RCS temperature $\leq$ 80°F, 30 minute checks of the flange temperatures are required because of the reduced margin to the limits. When in MODE 4 with RCS temperature $\leq$ 100°F, monitoring of the flange temperature is required every 12 hours to ensure the temperature is within the limits specified in the PTLR.

The 30 minute Frequency reflects the urgency of maintaining the temperatures within limits, and also limits the time that the temperature limits could be exceeded. The 12 hour Frequency is reasonable based on the rate of temperature change possible at these temperatures.

REFERENCES

1. 10 CFR 50, Appendix G.
2. ASME, Boiler and Pressure Vessel Code, Section III, Appendix G.
3. ASTM E 185-82, July 1982.
4. 10 CFR 50, Appendix H.
5. Regulatory Guide 1.99, Revision 2, May 1988.
6. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.
7. NEDO-21778-A, December ~~1978~~
[8. FSAR, Section [15.1.26].]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.11.3	----------NOTE---------- Only required to be met in MODES 1, 2, 3, and 4 [with reactor steam dome pressure ≥ 25 psig]. ----------	
	Verify the difference between the bottom head coolant temperature and the reactor pressure vessel (RPV) coolant temperature is within the limits specified in the PTLR.	Once within 15 minutes prior to each startup of a recirculation pump
SR 3.4.11.4	----------NOTE---------- Only required to be met in MODES 1, 2, 3, and 4. ----------	
	Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is within the limits specified in the PTLR.	Once within 15 minutes prior to each startup of a recirculation pump
SR 3.4.11.[5]	----------NOTE---------- Only required to be performed when tensioning the reactor vessel head bolting studs. ----------	
	Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.11.6 [8] ----------NOTE---------- Not required to be performed until 30 minutes after RCS temperature ≤ 80°F in MODE 4. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes
SR 3.4.11.7 [9] ----------NOTE---------- Not required to be performed until 12 hours after RCS temperature ≤ 100°F in MODE 4. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.11.2

A separate limit is used when the reactor is approaching criticality. Consequently, the RCS pressure and temperature must be verified within the appropriate limits before withdrawing control rods that will make the reactor critical.

Performing the Surveillance within 15 minutes before control rod withdrawal for the purpose of achieving criticality provides adequate assurance that the limits will not be exceeded between the time of the Surveillance and the time of the control rod withdrawal.

SR 3.4.11.3 and SR 3.4.11.4

Differential temperatures within the applicable PTLR limits ensure that thermal stresses resulting from the startup of an idle recirculation pump will not exceed design allowances. In addition, compliance with these limits ensures that the assumptions of the analysis for the startup of an idle recirculation loop (Ref. 8) are satisfied.

Performing the Surveillance within 15 minutes before starting the idle recirculation pump provides adequate assurance that the limits will not be exceeded between the time of the Surveillance and the time of the idle pump start.

INSERT 1

An acceptable means of demonstrating compliance with the temperature differential requirement in SR 3.4.11.4 is to compare the temperatures of the operating recirculation loop and the idle loop.

SR 3.4.11.3 has been modified by a Note that requires the Surveillance to be met only in MODES 1, 2, 3, and 4 with reactor steam dome pressure ≥ 25 psig. In MODE 5, the overall stress on limiting components is lower; therefore, ΔT limits are not required.

INSERT 2

SR 3.4.11.5, SR 3.4.11.6, and SR 3.4.11.7

Limits on the reactor vessel flange and head flange temperatures are generally bounded by the other P/T limits

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.11.[7], SR 3.4.11.[8], and SR 3.4.11.[9] (continued)

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The flange temperatures must be verified to be above the limits 30 minutes before and while tensioning the vessel head bolting studs to ensure that once the head is tensioned the limits are satisfied. When in MODE 4 with RCS temperature $\leq$ 80°F, 30 minute checks of the flange temperatures are required because of the reduced margin to the limits. When in MODE 4 with RCS temperature $\leq$ 100°F, monitoring of the flange temperature is required every 12 hours to ensure the temperatures are within the limits specified in the PTLR.

The 30 minute Frequency reflects the urgency of maintaining the temperatures within limits, and also limits the time that the temperature limits could be exceeded. The 12 hour Frequency is reasonable based on the rate of temperature change possible at these temperatures.

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[8. FSAR, Section [15.1.26].]