

## Industry/TSTF Standard Technical Specification Change Traveler

### Require Static and Transient Fq Measurement

Classification: 1) Correct Specifications

NUREGs Affected:  1430  1431  1432  1433  1434

#### Description:

When Actions require that Fq be verified to be within limits, both Fqc(z) [or measured Fq (z)] (SR 3.2.1.1) and Fqw(z) [or Fxyc < Fxyl] (SR 3.2.1.2) must be verified. This change adds a requirement to perform SR 3.2.1.2 to the Rod Group Alignment Limits and Quadrant Power Tilt Specifications to measure both values.

#### Justification:

Fq(z) is approximated by Fqc(z) [or measured Fq (z)] and Fqw(z) [or Fxyc < Fxyl], the static and transient portions of Fq. When core peaking factors need to be confirmed to be within limits, both Fqc(z) [or measured Fq (z)] and Fqw(z) [or Fxyc < Fxyl] must be measured to ensure that Fq is within limits. Specification 3.1.5, Rod Group Alignment Limits, and Specification 3.2.4, Quadrant Power Tilt Ratio, only require that Fqc(z) [or measured Fq (z)] (SR 3.2.1.1) be measured. This is incorrect. This change corrects this error by adding a requirement to perform SR 3.2.1.2.

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### Revision History

#### OG Revision 0 Revision Status: Closed

Revision Proposed by Commanche Peak

Revision Description:  
Original Issue

#### Owners Group Review Information

Date Originated by OG: 14-Jan-97

Owners Group Comments  
(No Comments)

Owners Group Resolution: Approved Date: 14-Jan-97

#### TSTF Review Information

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OG Review Completed:  BWOG  WOG  CEOG  BWROG

TSTF Comments:

Originally distributed on 4/8/97

2/5/98 - WOG to take back and consider changes.

TSTF Resolution: Withdrawn Date: 05-Feb-98

#### OG Revision 1 Revision Status: Active Next Action: NRC

Revision Proposed by WOG

12/8/98

**OG Revision 1**

**Revision Status: Active**

**Next Action: NRC**

Revision Description:  
Changed Description and Justification

**Owners Group Review Information**

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Owners Group Comments  
(No Comments)

Owners Group Resolution: Approved Date: 23-Jun-98

**TSTF Review Information**

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OG Review Completed:  BWOG  WOG  CEOG  BWROG

TSTF Comments:  
WOG only.

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**NRC Review Information**

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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**

Action 3.1.5.B Rod Group Alignment Limits

Action 3.1.5.B Bases Rod Group Alignment Limits

Action 3.2.4.A Quadrant Power Tilt Ratio (QPTR)

Action 3.2.4.A Bases Quadrant Power Tilt Ratio (QPTR)

12/8/98

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.2.1.2 Initiate boration to restore SDM to within limit.</p> <p><u>AND</u></p> <p>B.2.2 Reduce THERMAL POWER to <math>\leq 75\%</math> RTP.</p> <p><u>AND</u></p> <p>B.2.3 Verify SDM is <math>\geq [1.6]\% \Delta k/k</math>.</p> <p><u>AND</u></p> <p>B.2.4 Perform SR 3.2.1.1.</p> <p><u>AND</u> (and SR 3.2.1.2)</p> <p>B.2.5 Perform SR 3.2.2.1.</p> <p><u>AND</u></p> <p>B.2.6 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions.</p>	<p>1 hour</p> <p>2 hours</p> <p>Once per 12 hours</p> <p>72 hours</p> <p>72 hours</p> <p>5 days</p>
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours

(continued)

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3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be  $\leq 1.02$ .

APPLICABILITY: MODE 1 with THERMAL POWER > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. QPTR not within limit.	A.1 Reduce THERMAL POWER $\geq 3\%$ from RTP for each 1% of QPTR > 1.00.	2 hours
	<u>AND</u>	
	A.2 Perform SR 3.2.4.1 and reduce THERMAL POWER $\geq 3\%$ from RTP for each 1% of QPTR > 1.00.	Once per 12 hours
	<u>AND</u>	
	A.3 Perform SR 3.2.1.1 and SR 3.2.2.1.	24 hours
	<u>AND</u>	
	, SR 3.2.1.2,	Once per 7 days thereafter
	<u>AND</u>	
A.4 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition.	Prior to increasing THERMAL POWER above the limit of Required Action A.1	
	<u>AND</u>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.5 -----NOTE----- Perform Required Action A.5 only after Required Action A.4 is completed. -----</p> <p>Calibrate excore detectors to show zero QPTR.</p> <p><u>AND</u></p> <p>A.6 -----NOTE----- Perform Required Action A.6 only after Required Action A.5 is completed. -----</p> <p>Perform SR 3.2.1.1 and SR 3.2.2.1.</p> <p><i>SR 3.2.1.2,</i></p>	<p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> <p>Within 24 hours after reaching RTP</p> <p><u>OR</u></p> <p>Within 48 hours after increasing THERMAL POWER above the limit of Required Action A.1</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Reduce THERMAL POWER to <math>\leq</math> 50% RTP.</p>	<p>4 hours</p>

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BASES

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ACTIONS

B.2.1.1 and B.2.1.2 (continued)

The Completion Time of 1 hour represents the time necessary for determining the actual unit SDM and, if necessary, aligning and starting the necessary systems and components to initiate boration.

B.2.2, B.2.3, B.2.4, B.2.5, and B.2.6

For continued operation with a misaligned rod, RTP must be reduced, SDM must periodically be verified within limits, hot channel factors ( $F_Q(Z)$  and  $F_{\Delta H}^N$ ) must be verified within limits, and the safety analyses must be re-evaluated to confirm continued operation is permissible.

Reduction of power to 75% RTP ensures that local LHR increases due to a misaligned RCCA will not cause the core design criteria to be exceeded (Ref. 7). The Completion Time of 2 hours gives the operator sufficient time to accomplish an orderly power reduction without challenging the Reactor Protection System.

When a rod is known to be misaligned, there is a potential to impact the SDM. Since the core conditions can change with time, periodic verification of SDM is required. A Frequency of 12 hours is sufficient to ensure this requirement continues to be met.

as approximated by  $F_Q^c(Z)$  and  $F_Q^w(Z)$ ,

Verifying that  $F_Q(Z)$  and  $F_{\Delta H}^N$  are within the required limits ensures that current operation at 75% RTP with a rod misaligned is not resulting in power distributions that may invalidate safety analysis assumptions at full power. The Completion Time of 72 hours allows sufficient time to obtain flux maps of the core power distribution using the incore flux mapping system and to calculate  $F_Q(Z)$  and  $F_{\Delta H}^N$ .

Once current conditions have been verified acceptable, time is available to perform evaluations of accident analysis to determine that core limits will not be exceeded during a Design Basis Event for the duration of operation under these conditions. A Completion Time of 5 days is sufficient time to obtain the required input data and to perform the analysis.

(continued)

BASES

ACTIONS

A.1 (continued)

time to identify the cause and correct the tilt. Note that the power reduction itself may cause a change in the tilted condition.

A.2

After completion of Required Action A.1, the QPTR alarm may still be in its alarmed state. As such, any additional changes in the QPTR are detected by requiring a check of the QPTR once per 12 hours thereafter. If the QPTR continues to increase, THERMAL POWER has to be reduced accordingly. A 12 hour Completion Time is sufficient because any additional change in QPTR would be relatively slow.

as approximated by  $F_Q^c(z)$  and  $F_Q^w(z)$ ,

A.3

The peaking factors  $F_{\Delta H}^N$  and  $F_Q(Z)$  are of primary importance in ensuring that the power distribution remains consistent with the initial conditions used in the safety analyses. Performing SRs on  $F_{\Delta H}^N$  and  $F_Q(Z)$  within the Completion Time of 24 hours ensures that these primary indicators of power distribution are within their respective limits. A Completion Time of 24 hours takes into consideration the rate at which peaking factors are likely to change, and the time required to stabilize the plant and perform a flux map. If these peaking factors are not within their limits, the Required Actions of these Surveillances provide an appropriate response for the abnormal condition. If the QPTR remains above its specified limit, the peaking factor surveillances are required each 7 days thereafter to evaluate  $F_{\Delta H}^N$  and  $F_Q(Z)$  with changes in power distribution. Relatively small changes are expected due to either burnup and xenon redistribution or correction of the cause for exceeding the QPTR limit.

A.4

Although  $F_{\Delta H}^N$  and  $F_Q(Z)$  are of primary importance as initial conditions in the safety analyses, other changes in the power distribution may occur as the QPTR limit is exceeded

(continued)

BASES

ACTIONS

A.4 (continued)

and may have an impact on the validity of the safety analysis. A change in the power distribution can affect such reactor parameters as bank worths and peaking factors for rod malfunction accidents. When the QPTR exceeds its limit, it does not necessarily mean a safety concern exists. It does mean that there is an indication of a change in the gross radial power distribution that requires an investigation and evaluation that is accomplished by examining the incore power distribution. Specifically, the core peaking factors and the quadrant tilt must be evaluated because they are the factors that best characterize the core power distribution. This re-evaluation is required to ensure that, before increasing THERMAL POWER to above the limit of Required Action A.1, the reactor core conditions are consistent with the assumptions in the safety analyses.

A.5

If the QPTR has exceeded the 1.02 limit and a re-evaluation of the safety analysis is completed and shows that safety requirements are met, the excore detectors are recalibrated to show a zero QPTR prior to increasing THERMAL POWER to above the limit of Required Action A.1. This is done to detect any subsequent significant changes in QPTR.

Required Action A.5 is modified by a Note that states that the QPT is not zeroed out until after the re-evaluation of the safety analysis has determined that core conditions at RTP are within the safety analysis assumptions (i.e., Required Action A.4). This Note is intended to prevent any ambiguity about the required sequence of actions.

A.6

Once the flux tilt is zeroed out (i.e., Required Action A.5 is performed), it is acceptable to return to full power operation. However, as an added check that the core power distribution at RTP is consistent with the safety analysis assumptions, Required Action A.6 requires verification that  $F_Q(Z)$  and  $F_{\Delta H}^V$  are within their specified limits within 24 hours of reaching RTP. As an added precaution, if the

as approximated by  $F_Q^C(Z)$  and  $F_Q^W(Z)$ ,

(continued)