3.2 POWER DISTRIBUTION LIMITS

3.2.1 Heat Flux Hot Channel Factor ($F_Q(Z)$) (F_{xy} Methodology)

LCO 3.2.1 $F_Q(Z)$ shall be within the limits specified in the cycle-specific RSE report.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. FQ(Z) not within limit.	A.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% FQ(Z) exceeds limit. AND	15 minutes
	A.2 Reduce AFD acceptable operation limits by the percentage FQ(Z) exceeds limit. AND	4 hours
	A.3 Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% FQ(Z) exceeds limit. AND	8 hours
	A.4 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% FQ(Z) exceeds limit. AND	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.5 Perform SR 3.2.1.1 and SR 3.2.1.2.	Prior to increasing THERMAL POWER above the limit of Required Action A.1
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	----------NOTE---------- With measurements indicating the maximum $F_Q(Z)/K(Z)$ over Z has increased since the previous determination, either of the following actions shall be taken: (1) $F_Q(Z)$ shall be increased by an additional 2.0 percent to account for further increases in FQ(Z) before the next surveillance, or (2) $F_Q(Z)$ shall be measured every 7 EFPDs until two successive power distribution maps indicated that the maximum $F_Q(Z)/K(Z)$ over Z is not increasing. ---------- Verify measured values of $F_Q(Z)$ are within limits.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP AND 31 EFPD thereafter

2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.2.1.2 ----------NOTE---------- 1. IF $F_{XY}^{C} > F_{XY}^{L}$, reduce the $F_Q(Z)$ limit at least 1% for each 1% F_{XY}^{C} exceeds F_{XY}^{L}, and evaluate if $F_Q(Z)$ is within its limits. 2. If $F_{XY}^{RTP} < F_{XY}^{C} \leq F_{XY}^{L}$, SR 3.2.1.2 shall be repeated within 24 hours after an increase in THERMAL POWER at which F_{XY}^{C} was last determined of at least 20% RTP. 3. With measurements indicating the maximum $F_Q(Z)/K(Z)$ over Z has increased since the previous determination, either of the following actions shall be taken: (1) $F_{XY}^{C}(Z)$ shall be increased by an additional 2.0 percent to account for further increases in $F_{XY}^{C}(Z)$ before the next surveillance, or (2) $F_{XY}^{C}(Z)$ shall be measured every 7 EFPDs until two successive power distribution maps indicated that the maximum $F_Q(Z)/K(Z)$ over Z is not increasing. ----------	2
Verify $F_{XY}^{C} < F_{XY}^{L}$	Once after each refueling prior to THERMAL POWER exceeding 75% RTP AND 31 EFPD thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$)

LCO 3.2.2 $F^N_{\Delta H}$ shall be $\leq F^{RTP}_{\Delta H}[1.0+0.3(1.0-P)]$

where :

$F^N_{\Delta H}$ = Measured values of $F^N_{\Delta H}$ obtained by using the movable incore detectors to obtain a power distribution map.

$F^{RTP}_{\Delta H}$ = 1.62 (VANTAGE +) | 3

$$P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$$

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Required Actions A.2 and A.3 must be completed whenever Condition A is entered. ---------- $F^N_{\Delta H}$ not within limit.	A.1.1 Restore $F^N_{\Delta H}$ to within limit.	4 hours
	OR	
	A.1.2.1 Reduce THERMAL POWER to < 50% RTP.	4 hours
	AND	
	A.1.2.2 Reduce Power Range Neutron Flux - High trip setpoints to ≤ 55% RTP.	8 hours
	AND	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Perform SR 3.2.2.1. AND	24 hours
	A.3 ----------NOTE---------- THERMAL POWER does not have to be reduced to comply with this Required Action. ---------- Perform SR 3.2.2.1.	Prior to THERMAL POWER exceeding 50% RTP AND Prior to THERMAL POWER exceeding 75% RTP AND 24 hours after THERMAL POWER reaching ≥ 95% RTP
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify $F^N_{\Delta H}$ is within limits.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP AND 31 EFPD thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD) (Relaxed Axial Offset Control (RAOC) Methodology)

LCO 3.2.3 The AFD in % flux difference units shall be maintained within the limits specified in the cycle-specific Reload Safety Evaluation (RSE) report.

----------NOTE----------
-
The AFD shall be considered outside limits when two or more OPERABLE excore channels indicate AFD to be outside limits
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-

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AFD not within limits.	A.1 Reduce THERMAL POWER to <50% RTP.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify AFD within limits for each OPERABLE excore channel.	7 days AND Once within 1 hour and every 1 hour thereafter with the AFD monitor alarm inoperable

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be ≤ 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 ≥3% from RTP for each 1% of QPTR > 1.00. AND	2 hours
	A.2 Perform SR 3.2.4.1 and reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00. AND	Once per 12 hours
	A.3 Perform SR 3.2.1.1 and SR 3.2.2.1. AND	24 hours AND Once per 7 days thereafter
	A.4 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition. AND	Prior to increasing THERMAL POWER above the limit of Required Action A.1

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.4.1	----------NOTE---------- 1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER < 75% RTP, the remaining three power range channels can be used for calculating QPTR. 2. SR 3.2.4.2 may be performed in lieu of this Surveillance if adequate Power Range Neutron Flux channel inputs are not OPERABLE. ---------- Verify QPTR is within limit by calculation.	7 days AND Once within 12 hours and every 12 hours thereafter with the QPTR alarm inoperable
SR 3.2.4.2	----------NOTE---------- Only required to be performed if input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER ≥ 75% RTP. ---------- Verify INCORE TILT is within limit using the movable incore detectors.	Once within 12 hours AND 12 hours thereafter