(5) DNBR Margin During Power Operation Above 15% of Rated Power

(a) The following limits on DNB-related parameters shall be maintained:

(i)	Cold Leg Temperature (Core Inlet Temperature)	as specified in the COLR
(ii)	Pressurizer Pressure	≥2075 psia*
(iii)	Reactor Coolant Flow rate	≥202,500 gpm indicated
(iv)	Axial Shape Index	as specified in the COLR

(b) With any of the above parameters exceeding the limit, restore the parameter to within its limit within 2 hours or reduce power to less than 15% of rated power within the next 8 hours.

Basis

The limitation on linear heat rate ensures that in the event of a LOCA, the peak temperature of the fuel cladding will not exceed 2200°F.

Either of the two core power distribution monitoring systems, the Excore Detector Monitoring System or the Incore Detector Monitoring System, provides adequate monitoring of the core power distribution and is capable of verifying that the linear heat rate does not exceed its limit. The Excore Detector Monitoring System performs this function by continuously monitoring the axial shape index (ASI) with the operable quadrant symmetric excore neutron flux detectors. The axial shape index is maintained within the allowable limits of the Limiting Condition for Operation for Excore Monitoring of LHR Figure provided in the COLR. This ASI is adjusted by Specification 2.10.4(1)(c) for the allowed linear heat rate of the Allowable Peak Linear Heat Rate vs. Burnup Figure provided in the COLR and the F_R^T and Core Power Limitations Figure provided in the COLR. In conjunction with the use of the excore monitoring system and in establishing the axial shape index limits, the following assumptions are made: (1) the CEA insertion limits of Specification 2.10.1(6) and long term insertion limits of Specification 2.10.1(7) are satisfied, and (2) the flux peaking augmentation factors are as shown in Figure 2-8.

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* Limit not applicable during either a thermal power ramp in excess of 5% of rated thermal power per minute or a thermal power step of greater than 10% of rated thermal power.

In order for these objectives to be met, the reactor must be operated consistent with the operating limits specified for margin to DNB.

The parameter limits given in (5) and the F_R^T and Core Power Limitations Figure provided in the COLR along with the parameter limits on quadrant tilt and control element assembly position (Power Dependent Insertion Limit Figure provided in the COLR) provide a high degree of assurance that the DNB overpower margin will be maintained during steady state operation.

The actions specified assure that the reactor is brought to a safe condition.

The Reactor Coolant System flow rate of 202,500 gallons per minute is the indicated value. It does not include instrumentation uncertainties.

The calorimetric methodology shall be used to measure the Reactor Coolant System flow rate.

AZIMUTHAL POWER TILT

Azimuthal Power Tilt is measured using symmetric in-core or ex-core detectors by assuming that the ratio of the power at any core location in the presence of a tilt to the untilted power at that location is of the form:

$$P_{tilt}(r,\theta)/P_{avg}(r,\theta) - 1 = T_q \bullet g(r) \bullet \cos(\theta - \theta_o)$$

where

$P_{tilt}(r,\theta)$	is the tilted power at radius r and azimuthal angle θ
$P_{avg}(r,\theta)$	is the average or untilted power at that location
T_q	is the azimuthal tilt magnitude
$g(r)$	is the radial normalizing factor, normalized to a maximum value of unity
θ	is the azimuthal core location
θ_o	is the azimuthal core location of maximum tilt.

T_q represents the maximum fractional increase in power that can occur anywhere in the core because of tilt. It is the appropriate measured value of tilt to be used when ensuring the validity of the azimuthal tilt assumed by ABB-CE in establishing safety limits.