

$$R_1 = F_{\Delta H}^N / 1.49 [1.0 + 0.2 (1.0 - P)]$$

$$R_2 = R_1 / [1.0 - RBP (BU)]$$

NOTE: When operating in Region III, the restricted power levels shall be considered to be 100% of Rated Thermal Power (RTP) for Figure 2.1-1.

Figure 3.2-3 RCS FLOW RATE VERSUS R

SUMMER - UNIT 1

3/4 2-10

8412040122 841129
PDR ADOCK 05000395
P PDR

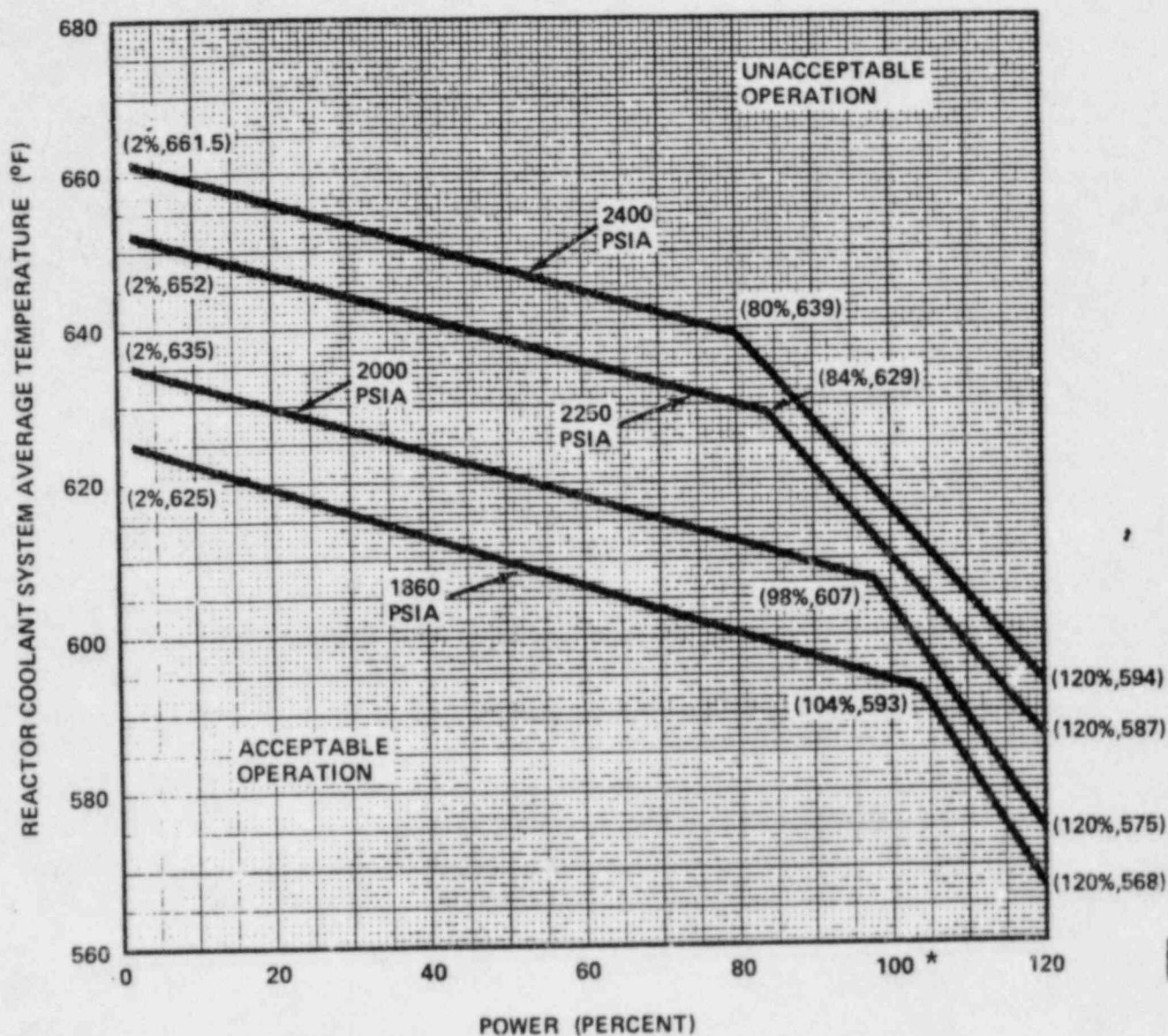


Figure 2.1-1
Reactor Core Safety Limit - Three Loops in Operation

* When operating in Region III of Technical Specification 3.2.3 (Figure 3.2-3), the restricted power level must be considered 100% RTP for this figure.

ATTACHMENT 2

RCS FLOW RATE LESS THAN THERMAL DESIGN (TD) FLOW

Current Technical Specification 3.2.3, Figure 3.2-3 limits operation to less than 5% of Rated Thermal Power (RTP) should measured RCS Flow be less than the TD flow used in the plant safety analyses. This Technical Specification does not recognize the possibility of a long term reduction in flow, nor the various trade-offs allowed by the relationships between flow, departure from nucleate boiling (DNB), and core power.

These trade-offs can be used to justify continued operation at some reduced maximum allowed power if the measured RCS flow is less than the TD flow.

It is widely recognized that the relationships between core power, flow, and DNB are:

$$\frac{\partial \text{Flow}}{\partial \text{DNB}} = \frac{1\%}{1\%} \quad (\text{Eq. 1})$$

$$\frac{\partial \text{Power}}{\partial \text{DNB}} = \frac{1\%}{1.8\%} \quad (\text{Eq. 2})$$

Thus the relationship between Power and Flow is:

$$\frac{\partial \text{Power}}{\partial \text{Flow}} = \frac{1\%}{1.8\%} \quad (\text{Eq. 3})$$

Based on a conservative assumption that the measured RCS flow will be no lower than 95% of TD flow, it is requested that a region of acceptable operation be added to Figure 3.2.3 for:

$$95\% \text{ TD Flow} \leq \text{RCS Flow} \leq 100\% \text{ TD Flow}$$

Considering the relationship given by Equation 3, it is recommended that the maximum power level for this region be reduced by 2% for each 1% reduction in measured flow below TD flow. This conservative restriction of core power is the equivalent of an RCS flow increase ranging from approximately 2.6% - 13.0% in terms of DNB margin for flow deficits up to 5%. Operation of the plant in this region within the specified power restriction does not result in increased T_{avg} , thus there is no temperature impact on the DNB margin.

The Technical Specifications and accident analyses results have been evaluated to determine the impact of operating within the defined new region of Figure 3.2-3 with the imposed restrictions. In all cases, sufficient margin exists to allow continued plant operations. No Technical Specification limits require modification, including core limits, $OT\Delta T$, $OP\Delta T$, and Power Range Neutron Flux High setpoints.

The core limits remain the same due to the increased margin to DNB afforded by the power reduction and interpretation that they will be valid for the restricted power levels. This implies that under these conditions the restricted power level should be considered to be 100% of Rated Thermal Power (RTP) for Figure 2.1-1. With this restriction applied to the Safety limits, there is no change in the core limits thus the $OT\Delta T$ and $OP\Delta T$ trip setpoints remain unchanged. Utilizing the latest Westinghouse data, the uncertainty in the instrumentation for the Power Range Neutron Flux High trip function is 4.7% span (or 5.7% RTP). With a normal assumption of reactor trip at 109% RTP, the uncertainty analysis verifies that a trip will take place at 109% RTP plus 5.7% uncertainty or 114.7% RTP. A 5% reduction in RCS flow requires a trip at 115.2% RTP. Therefore, adequate margin exists in the instrumentation such that no change in the nominal setpoint is necessary.

If the measured RCS flow is equal to or greater than TD flow, operation will be in the acceptable region of the present Figure 3.2-3 and the requirements of this specification will remain unchanged. The addition of the new region to Figure 3.2-3 is only requested to preclude a needless reduction to 5% RTP should the measured RCS flow be less than TD flow.

ATTACHMENT 3

SIGNIFICANT HAZARDS CONSIDERATION

The proposed amendment to the Technical Specifications does not involve a significant hazards consideration for the following reasons:

No significant increase in the probability or consequences of an accident previously evaluated is involved because the probability of an accident does not change and sufficient margin for plant operations remains to prevent a significant increase in accident consequences.

The possibility of a new or different kind of accident from any previously evaluated is not created because the plant systems and physical design remain the same.

No significant reduction in a margin of safety is involved because the 2% power reduction for every 1% flow reduction ensures a sufficient margin of safety remains.

Neeraj Bano

25 OCT 1987