3/4.2.6 POWER/FLOW INSTABILITY

At the high power/low flow corner of the operating domain, a small probability of limit cycle neutron flux oscillations exists depending on combinations of operating conditions (e.g., power shape, bundle power, and bundle flow).

In 1984, GE issued SIL 380 addressing boiling instability and made several recommendations. In this SIL, the power/flow map was divided into several regions of varying concern. It also discussed the objectives and philosophy of "detect and suppress." The SIL recommends that REGION A be bounded by the 100% rod line and REGION C be bounded by the 80% rod line.

The NRC Generic Letter 86-02 discussed both the GE and SIEMENS (then EXXON) stability methodology and stated that due to uncertainties, General Design Criteria 10 and 12 could not be met using available analytical procedures on a BWR. The letter discussed SIL 380 and stated that General Design Criteria 10 and 12 could be met by imposing SIL 380 recommendations in operating regions of potential instabilities. The NRC concluded that regions of potential instability constituted decay ratios of 0.8 and greater by the GE methodology and 0.75 by the SIEMENS methodology which existed at that time.

SIEMENS Power Corporation has recently developed an improved stability computer code STAIF. A topical report (EMF-CC-074P) which describes the STAIF stability code and provides benchmarking against reactor data was submitted to the NRC in 1993. The NRC issued a SER approving the STAIF stability code for establishing stability boundaries on April 14, 1994. In the SER on STAIF the NRC stated the uncertainty in the STAIF code was 20%.

The STAIF stability code has been used to establish the stability region boundaries for WNP-2. The lower boundary of REGION A was defined to assure it bounds a decay ratio of 0.9. REGION C, where applicable, was conservatively defined to bound a decay ratio of 0.75.

~~The~~ Stability REGION~~S~~ A ~~and B are~~ is shown in Figure 3.2.6-1. REGION A conforms to the recommendations of SIL 380 in that REGION A bounds a calculated decay ratio of 0.9. Operation in REGION A is prohibited. ~~REGION C bounds a decay ratio of 0.75.~~

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3/4.2.6 POWER/FLOW INSTABILITY

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Stability REGION A is shown in Figure 3.2.6-1. REGION A conforms to the recommendations of SIL 380 in that REGION A bounds a calculated decay ratio of 0.9. Operation in REGION A is prohibited.