N_i = number of active control rods measured in the ith surveillance test.

τ_i = average scram time to the 30% insertion position of all rods measured in the ith surveillance test.

c) The adjusted analysis mean scram time (τ_B) is calculated as follows:

$$\tau_B = \mu + 1.65 \left[\frac{N_i}{\sum_{i=1}^{n} N_i} \right]^{1/2} \sigma$$

Where:

μ = mean of the distribution for average scram insertion time to the 30% position 0.945 sec.

N_i = total number of active control rod measured in specification 4.3.C.

σ = standard deviation of the distribution for average scram insertion time to the 30% position, 0.064 sec.

D. Power/Flow Relationship During Power Operation

The power/flow relationship shall not exceed the limiting values shown in Figure 3.11-9. If at any time during power operation it is determined by normal surveillance that the limiting value for the power-flow relationship is being exceeded, action shall be initiated within 15 minutes to restore operation to within the prescribed limits. If the power/flow relationship is not returned to within the prescribed limits within two (2) hours, the reactor shall be brought to the Cold Shutdown condition within 36 hours. Surveillance and corresponding action shall continue until reactor operation is within the prescribed limits.

D. Power/Flow Relationship During Power Operation

Compliance with the power/flow relationship in Section 3.11.D shall be determined daily during reactor operation.

The K_f factors shown in Figure 3.11-8[4] are conservative for the Pilgrim Unit 1 operation because the operating limit MCPR given in Specification 3.11C is greater than the original 1.20 operating limit MCPR used for the generic derivation of K_f.

4.11.C MINIMUM CRITICAL POWER RATIO (MCPR) - SURVEILLANCE REQUIREMENT

At core thermal power levels less than or equal to 25%, the reactor will be operating at minimum recirculation pump speed and the moderator void content will be very small. For all designated control rod patterns which may be employed at this point, operating plant experience indicated that the resulting MCPR value is in excess of requirements by a considerable margin. With this low void content, any inadvertent core flow increase would only place operation in a more conservative mode relative to MCPR. During initial start-up testing of the plant, a MCPR evaluation will be made at 25% thermal power level with minimum recirculation pump speed. The MCPR margin will thus be demonstrated such that future MCPR evaluation below this power level will be shown to be unnecessary. The daily requirement for calculating MCPR above 25% rated thermal power is sufficient since power distribution shifts are very slow when there have not been significant power or control rod changes. The requirement for calculating MCPR when a limiting control rod pattern is approached ensures that MCPR will be known following a change in power or power shape (regardless of magnitude) that could place operation at a thermal limit.

3.11.D Power/Flow Relationship Bases

The power/flow curve is the locus of core thermal power as a function of flow from which the occurrence of abnormal operating transients will yield results within defined plant safety limits. Each transient and postulated accident applicable to operation of the plant was analyzed along the power/flow line. The analysis justifies the operating envelope bounded by the power/flow curve as long as other operating limits are satisfied. Operation under the power/flow line is designed to enable the direct ascension to full power within the design basis for the plant.