

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

NOTE 1: Overtemperature  $\Delta T \leq \Delta T_0 [K_1 - K_2 \left( \frac{1 + \tau_1 S}{1 + \tau_2 S} \right) (T - T') + K_3 (P - P') - f_1(\Delta I)]$

where:  $\Delta T_0$  = Indicated  $\Delta T$  at RATED THERMAL POWER

$T$  = Average temperature, °F

$T'$  = Indicated  $T_{avg}$  at RATED THERMAL POWER  $\leq 577.9^\circ\text{F}$

$P$  = Pressurizer pressure, psig

$P'$  = 2235 psig (indicated RCS nominal operating pressure)

$\frac{1 + \tau_1 S}{1 + \tau_2 S}$  = The function generated by the lead-lag controller for  $T_{avg}$  dynamic compensation

$\tau_1$  &  $\tau_2$  = Time constants utilized in the lead-lag controller for  $T_{avg}$   $\tau_1 = 30$  secs  $\pm 10\%$ ,  
 $\tau_2 = 4$  secs.  $\pm 10\%$

$S$  = Laplace transform operator,  $\text{Sec}^{-1}$

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

NOTE 2: Overpower:  $\Delta T \leq \Delta T_o \left[ K_4 - K_5 \left[ \frac{\tau_3 S}{1 + \tau_3 S} \right] T - K_6 (T - T'') - f_2(\Delta I) \right]$

where:  $\Delta T_o$  = Indicated  $\Delta T$  at RATED THERMAL POWER

$T$  = Average temperature, °F

$T''$  = Indicated  $T_{avg}$  at RATED THERMAL POWER  $\leq 577.9^\circ\text{F}$

$K_4$  = 1.09

$K_5$  = 0.02/°F for increasing average temperature and 0 for decreasing average temperature

$K_6$  = 0.00149/°F for  $T > T''$ ;  $K_6 = 0$  for  $T \leq T''$

$\frac{\tau_3 S}{1 + \tau_3 S}$  = The function generated by the rate lag controller  
for  $T_{avg}$  dynamic compensation

$\tau_3$  = Time constant utilized in the rate lag controller for  
 $T_{avg}$   $\tau_3 = 10$  secs.  $\pm 10\%$

$S$  = Laplace transform operator,  $\text{Sec}^{-1}$

$f_2(\Delta I)$  = 0 for all  $\Delta I$

NOTE 3: The channel's maximum trip point shall not exceed its computed trip point by more than 1.1 percent.

NOTE 4: The channel's maximum trip point shall not exceed its computed trip point by more than 2.1 percent.

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