TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

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

where: ΔT_o = Indicated ΔT at RATED THERMAL POWER

T = Average temperature, °F

T' $\leq$ 577.2°F (Maximum Reference T_{avg} at RATED THERMAL POWER)

P = Pressurizer pressure, psig

P' = 2235 psig (Nominal RCS 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, $\tau 2$ = 4 secs.

S = Laplace transform operator, sec^{-1}.

Operation with 3 Loops	Operation with 2 Loops
K_1 = 1.22	K_1 = (values blank pending
K_2 = 0.0154	K_2 = NRC approval of
K_3 = 0.000635	K_3 = 2 loop operation)

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION continued

(i) for $q_t = q_b$ between -35 percent and +9 percent, $f_1(\Delta I) = 0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t = q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

(ii) for each percent that the magnitude of $(q_t - q_b)$ exceeds -35 percent, the ΔT trip setpoint shall be automatically reduced by 1.37 percent of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of $(q_t - q_b)$ exceeds +9 percent, the ΔT trip setpoint shall be automatically reduced by 1.60 percent of its value at RATED THERMAL POWER.

Note 2: Overpower $\Delta T \leq \Delta T_o \left[K_4 - K_5 \frac{\tau 3 S}{1+\tau_3 S} - K_6(T-T") - f_2(\Delta I)\right]$

where:

ΔT_o = Indicated ΔT at RATED THERMAL POWER

T = Average temperature, °F

$T"$ = Reference T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, $\leq$ 577.2°F)

K_4 = 1.08

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

K_6 = 0.00109/°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

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

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

where: ΔT_o = Indicated ΔT at RATED THERMAL POWER

T = Average temperature, °F

$T' \leq$ 577.2°F (Maximum Reference T_{avg} at RATED THERMAL POWER)

P = Pressurizer pressure, psig

P' = 2235 psig (Nominal RCS 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, $\tau 2$ = 4 secs.

S = Laplace transform operator, sec^{-1}.

Operation with 3 Loops	Operation with 2 Loops
K_1 = 1.22	K_1 = (values blank pending
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K_3 = 0.000635	K_3 = 2 loop operation)

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

NOTATION continued

(i) for $q_t = q_b$ between -35 percent and +9 percent, $f_1(\Delta I) = 0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

(ii) for each percent that the magnitude of $(q_t - q_b)$ exceeds -35 percent, the ΔT trip setpoint shall be automatically reduced by 1.37 percent of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of $(q_t - q_b)$ exceeds +9 percent, the ΔT trip setpoint shall be automatically reduced by 1.60 percent of its value at RATED THERMAL POWER.

Note 2: Overpower $\Delta T \leq \Delta T_o [K_4 - K_5 \frac{\tau 3 S}{1+\tau_3 S} - K_6(T-T") - f_2(\Delta I)]$

where: ΔT_o = Indicated ΔT at RATED THERMAL POWER

T = Average temperature, °F

$T"$ = Reference T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, $\leq$ 577.2°F)

K_4 = 1.08

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K_6 = 0.00109/°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