

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATIONS

Marked-up Technical Specifications Pages,

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2-8 (for information only)
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2-10 (for information only)

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TABLE 2.2-1 (Continued)

TABLE NOTATIONS

NOTE 1: OVERTEMPERATURE ΔT

$$\Delta T \left\{ \frac{1 + \tau_1 S}{1 + \tau_2 S} \right\} \left(\frac{1}{1 + \tau_3 S} \right) \leq \Delta T_0 \left\{ K_1 - K_2 \frac{(1 + \tau_4 S)}{(1 + \tau_5 S)} \left[T \left(\frac{1}{1 + \tau_6 S} \right) - T' \right] + K_3 (P - P') - f_1 (\Delta I) \right\}$$

Where: ΔT = Measured ΔT by RTD Instrumentation

$\frac{1 + \tau_1 S}{1 + \tau_2 S}$ = Lead/Lag compensator on measured ΔT ; $\tau_1 = 8s$, $\tau_2 = 3s$

$\frac{1}{1 + \tau_3 S}$ = Lag compensator on measured ΔT ; $\tau_3 = 0s$

ΔT_0 = Indicated ΔT at RATED THERMAL POWER

K_1 = 1.095;

K_2 = 0.0107/°F;

$\frac{1 + \tau_4 S}{1 + \tau_5 S}$ = The function generated by the lead-lag compensator for T_{avg} dynamic compensation;

τ_4, τ_5 = Time constants utilized in the lead-lag compensator for T_{avg} , $\tau_4 = 25s$, $\tau_5 = 3s$;

T = Average temperature, °F;

$\frac{1}{1 + \tau_6 S}$ = Lag compensator on measured T_{avg} ; $\tau_6 = 0s$

T' \leq 574.2°F (Nominal T_{avg} at RATED THERMAL POWER);

K_3 = 0.000453/psig;

P = Pressurizer pressure, psig;

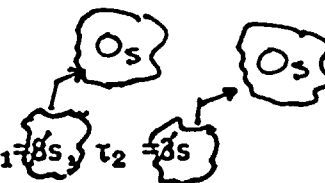




TABLE 2.2-1 (Continued)
TABLE NOTATIONS (Continued)

NOTE 1: (Continued)

P' \geq 2235 psig (Nominal RCS operating pressure);

S = Laplace transform operator, s^{-1} ;

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

- (1) For $q_t - q_b$ between - 14% and + 10%, $f_1 (\Delta I) = 0$, 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;
- (2) For each percent that the magnitude of $q_t - q_b$ exceeds - 14%, the ΔT Trip Setpoint shall be automatically reduced by 1.5% of its value at RATED THERMAL POWER; and
- (3) For each percent that the magnitude of $q_t - q_b$ exceeds + 10%, the ΔT Trip Setpoint shall be automatically reduced by 1.5% of its value at RATED THERMAL POWER.

NOTE 2: The channels maximum trip setpoint shall not exceed its computed setpoint by more than 1.5% of instrument span.

TABLE 2.2-1 (Continued)
TABLE NOTATIONS (Continued)

NOTE 3: OVERPOWER ΔT

$$\Delta T \left\{ \frac{1 + \tau_1 S}{1 + \tau_2 S} \right\} \left(\frac{1}{1 + \tau_3 S} \right) \leq \Delta T_0 \{ K_4 - K_5 \left(\frac{\tau_7 S}{1 + \tau_7 S} \right) \left(\frac{1}{1 + \tau_6 S} \right) T - K_6 \left[T \left(\frac{1}{1 + \tau_6 S} \right) - T'' \right] - f_2 (\Delta I) \}$$

Where: ΔT = As defined in Note 1,

$\frac{1 + \tau_1 S}{1 + \tau_2 S}$ = As defined in Note 1,

$\frac{1}{1 + \tau_3 S}$ = As defined in Note 1,

ΔT_0 = As defined in Note 1,

K_4 \leq 1.09,

K_5 \geq 0.02/°F for increasing average temperature and 0 for decreasing average temperature,

$\frac{\tau_7 S}{1 + \tau_7 S}$ = The function generated by the rate-lag compensator for T_{avg} dynamic compensation,

τ_7 = Time constants utilized in the rate-lag compensator for T_{avg} , $\tau_7 \geq 10$ s,

$\frac{1}{1 + \tau_6 S}$ = As defined in Note 1,

TABLE 2.2-1 (Continued)
TABLE NOTATIONS (Continued)

NOTE 3: (Continued)

K_8	= 0.00068/°F for $T > T''$ = 0 for $T \leq T''$,
T	= As defined in Note 1,
T''	= Indicated T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, $\leq 574.2^\circ\text{F}$),
S	= As defined in Note 1, and
$f_2(\Delta I)$	= 0 for all ΔI

NOTE 4: The channel's maximum trip setpoint shall not exceed its computed trip setpoint by more than 1.4% of instrument span.



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