$$1 + \frac{\gamma - 1}{2} M_9^2 = \tau_{tb}\, \tau_{ta}\, \tau_c\, \tau_r \qquad (1)$$

$$M_9 = \left[\frac{2}{\gamma - 1} \left(\tau_{tb}\, \tau_{ta}\, \tau_c\, \tau_r - 1 \right) \right]^{1/2} \qquad (2)$$

and

$$\frac{T_9}{T_0} = \frac{\cancel{\tau_{tb}}^{\,1}\, \tau_{\lambda b}}{\cancel{\tau_{tb}}^{\,1}\, \tau_{ta}\, \tau_c\, \tau_r} = \frac{\tau_{\lambda b}}{\tau_{ta}\, \tau_c\, \tau_r}$$

off :

all derivations for pressure i.e. (1) + (2) remain the same

T_t is backed up to station 4 :

(no burning)

$$\frac{T_{t9}}{T_9} = 1 + \frac{\gamma - 1}{2} M_9^2 = \cancel{\frac{T_{t9}}{T_{t5}}}^{\,1}\, \frac{T_{t5}}{T_{t4b}}\, \cancel{\frac{T_{t4b}}{T_{t4a}}}^{\,1}\, \frac{T_{t4a}}{T_{t4}}\, \frac{T_{t4}}{T_0}\, \frac{T_0}{T_9}$$

$$= \tau_{tb}\, \tau_{ta}\, \tau_\lambda\, \frac{T_0}{T_9}$$

$$\frac{T_9}{T_0} = \frac{\tau_{tb}\, \tau_{ta}\, \tau_\lambda}{1 + \frac{\gamma - 1}{2} M_9^2} = \frac{\cancel{\tau_{tb}}\, \cancel{\tau_{ta}}\, \tau_\lambda}{\cancel{\tau_{tb}}\, \cancel{\tau_{ta}}\, \tau_c\, \tau_r} = \frac{\tau_\lambda}{\tau_c\, \tau_r}$$