COMO $p_d = p_{AD}$ $\qquad W = G_t\, h_a \left[\left(\frac{p_a}{p_{AD}}\right)^{\frac{\gamma-1}{\gamma}} - 1\right]$

(1) $\boxed{\frac{p_{AD}}{p_a} = 0.114}$ $\qquad$ (1) $\boxed{T_d = T_a}$ $\qquad$ $\boxed{\frac{\rho_d}{\rho_a} = \frac{p_{ad}}{T_d}\frac{T_a}{p_a} = 0.114}$

DENSIDAD Y TEMPERATURA EN SALIDA TOBERA: $\frac{\rho_{st}}{\rho_a} = 0.212$; $\frac{T_{st}}{T_a} = 0.538$

$$M_s = 2.07 = \frac{u_s}{\sqrt{\gamma R_g T_s}} = \frac{u_s}{\sqrt{\gamma R_g T_a}\,\sqrt{0.538}} \Rightarrow \boxed{u_s = M_s\, a_a \sqrt{0.538}}$$

3) ECUACIÓN DE CONTINUIDAD

$$\frac{d}{dt}\int_{V_c} \rho\, dV + \int_{\Sigma_c} \rho\, (\bar{u}-\bar{u}_c)\cdot\bar{n}\, d\sigma = 0$$

$$V\frac{d\rho}{dt} - G_t = 0 \Rightarrow \boxed{\rho(t) = \frac{G_t}{V}\, t + \rho_d}$$ (1)

ECUACIÓN DE LA ENERGÍA

$$\frac{d}{dt}\int_{V_c} \rho\left(e+\frac{u^2}{2}\right) dV + \int \rho\left(e+\frac{u^2}{2}\right)\bar{u}\cdot\bar{n}\, d\sigma = -\int p\,\bar{u}\,\bar{n}\, d\sigma$$

$$V\frac{d}{dt}(\rho e) - \overbrace{\left(e+\frac{u^2}{2}+\frac{p}{\rho}\right)_t}^{h_a} G_t = 0 \; ; \; c_v V \frac{d}{dt}(\rho T) = G_t\, h_a$$ (1)

$$\frac{V}{\gamma-1}\frac{dp}{dt} = G_t\, h_a \Rightarrow \boxed{p(t) = \frac{\gamma-1}{V} G_t\, h_a\, t + p_{AD}}$$

4) $t_v \Rightarrow p_d = p_{BS}$ $\Rightarrow \boxed{t_v = \frac{p_{BS}-p_{AD}}{h_a}\,\frac{V}{G_t(\gamma-1)}}$ (2)