2.7 Match Launch Time with Time Launch Site Crosses Orbital Plane (Continued)

$$(\Omega - \Lambda_L) = -n \left\{ \Omega_e \tau_w \left(1 + \frac{\Delta\tau}{\tau}\right) + \dot{\Omega}_w \right\}$$

$$+ \Omega_e \left\{ t_{2f} + t^* - t_t - t_{ascent} \right\}$$

$$\mp \sin^{-1} \left(\frac{\tan L_L}{\tan i} \right) - \delta\, 180°$$

$$+ \Omega_e \left\{ \left(\frac{\theta_f}{360°} \right) \left(\Delta\tau_f + \dot{\Omega}_f \right) \right.$$

$$\left. + \left(\frac{\theta_t}{360°} \right) \left(\Delta\tau_t + \dot{\Omega}_t \right) \right\}$$

Once all of the orbital parameters have been established, this equation becomes that of a straight line. Launch sites which satisfy the timing requirements for various values of n may be solved for.

For a given launch site, the number of revolutions is given by:

$$n = \frac{\Omega_e}{\Omega_e \tau_w \left(1 + \frac{\Delta\tau}{\tau}\right) + \dot{\Omega}_w} \left\{ \frac{\tau_f}{360°} [E_{2f} \right.$$

$$- e_f \sin E_{2f}] - \frac{\tau_t}{360°} [E_t - e_t \sin E_t]$$

$$- t_{ascent} + t^* - \frac{1}{\Omega_e} [(\Omega - \Lambda_L)$$