"zero g" flight

\[ x = V \cos \theta \]
\[ h = V \sin \theta \]
\[ \dot{V} = \frac{g}{W} \left[ T \cos \theta - D - W \sin \theta \right] \]
\[ \dot{h} = \frac{g}{W} \left[ T \sin \theta + L - N \cos \theta \right] \]

If \( T \cos \theta - D = 0 \) and \( T \sin \theta + L = 0 \), these equations reduce to the equations for an orbit. Hence,

The airplane is on an orbit when the pilot flies it \((\alpha, \beta)\) such that

\[ T(\alpha, V, \beta) \cos(\varepsilon + \alpha) - D(\alpha, V, \beta) = 0 \]
\[ T(\alpha, V, \beta) \sin(\varepsilon + \alpha) + L(\alpha, V, \beta) = 0 \]

where \( \alpha, V \) are known functions of time from the orbit equations.