2.3 $\bar{V} = \frac{d\bar{E}_0}{dt}$ γ = Const climb

$$V\cos\gamma\,\bar{\imath}_h - V\sin\gamma\,\bar{k}_h = \frac{d}{dt}(x\,\bar{\imath}_h - h\,\bar{k}_h) = \dot{x}\,\bar{\imath}_h - \dot{h}\,\bar{k}_h$$

$\dot{x} = V\cos\gamma \quad \dot{h} = V\sin\gamma$

$\bar{a} = \frac{d\bar{V}}{dt} \quad \bar{V} = V\bar{\imath}_w \qquad \gamma = \text{Const} \Rightarrow \bar{\imath}_w = \text{Const.}$

$\bar{a} = \dot{V}\bar{\imath}_w$

$$\bar{F} = (T\cos\varepsilon - D - W\sin\gamma)\,\bar{\imath}_w - (T\sin\varepsilon + L - W\cos\gamma)\,\bar{k}_w$$

$$\dot{V} = \frac{g}{W}(T\cos\varepsilon - D - W\sin\gamma)$$

$$0 = T\sin\varepsilon + L - W\cos\gamma$$

$$\dot{W} = -cT$$

$\dot{x} = V\cos\gamma$
$\dot{h} = V\sin\gamma$
$\dot{V} = (g/W)(T\cos\varepsilon - D - W\sin\gamma)$
$0 = T\sin\varepsilon + L - W\cos\gamma$
$\dot{W} = -cT$

$T(h, V, P)$
$C(h, V, P)$
$D(\rho, V, \alpha)$
$L(h, V\alpha)$
$\varepsilon = \varepsilon_0 + \alpha$

var. x, h, V, W, P, α
6 var − 5 eqns = 1 n'l df

$\dot{x} = V\cos\gamma$
$\dot{h} = V\sin\gamma$
$\dot{V} = (g/W)(T\cos\varepsilon - D - W\sin\gamma)$
$\dot{\gamma} = (g/WV)(T\sin\varepsilon + L - W\cos\gamma)$
$\dot{W} = -cT$

$\gamma = \text{Const} \Rightarrow \dot{\gamma} = 0$
These eqns. reduce to above eqns.