

2.4 Climb  $\gamma = \text{const.}$   $V = \text{const.}$

$$\bar{V} = \frac{dE_0}{dt} \rightarrow \dot{x} = V \cos \gamma \quad \dot{h} = V \sin \gamma$$

$$a = \frac{d\bar{V}}{dt} \quad \bar{V} = V \bar{i}_w \Rightarrow \bar{a} = 0 \bar{i}_w + 0 \bar{k}_w \text{ since } V = \text{const.}, \gamma = \text{const.}$$

$$0 = T \cos \epsilon - D - W \sin \gamma$$

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

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

$$\dot{x} = V \cos \gamma$$

$$\dot{h} = V \sin \gamma$$

$$0 = T \cos \epsilon - D - W \sin \gamma$$

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

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

$$T(h, V, \rho)$$

$$C(h, V, \rho)$$

$$D(h, V, \alpha)$$

$$L(h, V, \alpha)$$

$$E = E_0 + \alpha$$

var.  $x, h, W, P, \alpha$

5 var. - 5 eqns = 0 dof

$$\dot{x} = V \cos \gamma$$

$$\dot{h} = V \sin \gamma$$

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

$$\dot{\gamma} = (g/WV)(T \sin \epsilon + L - W \cos \gamma)$$

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

$$\gamma = \text{const} \Rightarrow \dot{\gamma} = 0$$

$$V = \text{const} \Rightarrow \dot{V} = 0$$

These equations reduce to above