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Covering all aspects of Aerospace

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Variation of σ with M_0 at different θ

M_0	$\theta = 0$	$\theta = 1\%$	$\theta = 2\%$
3	0.305	0.325	0.377
3.5	0.423	0.474	0.471
4.0	0.570	0.569	0.566
4.5	0.669	0.668	0.665
5	0.779	0.777	0.775

Table 5
Variation of σ with M_0 at different θ

M_0	$\theta = 0$	$\theta = 1\%$	$\theta = 2\%$
3	0.528	0.562	0.651
3.5	0.462	0.565	0.562
4	0.543	0.541	0.539
4.5	0.522	0.520	0.518
5	0.504	0.502	0.5

Table 6
Variations of M_{α} , $M_{\dot{\alpha}}$ and d with θ

θ	M_{α}	$M_{\dot{\alpha}}$	d
0	3.6	4.2	0.6
0.5%	3.5	4.0	0.5
1%	3.2	3.7	0.5
1.5%	3.1	3.5	0.4
2%	3.0	3.4	0.4

- Aerodynamic coefficients
- Maximum lift coefficients
- γ, ϕ, α
- $L_{ST}/MTOW, AR$
- N
- $MF_L, F_S, F_{TO}, F_L, F_{OEI}$

Method

- X_{TO}
- X_L
- Climb rate
- $T_0/MTOW$
- $MTOW/S$

Design Point Estimation
Performance Estimation

$$M_V + \frac{Z_V M_{\dot{\alpha}}}{V_0} M_{\alpha} + \frac{Z_{\alpha} M_{\alpha}}{V_0} \left(1 + \frac{Z_q}{V_0} \right) M_{\dot{\alpha}} + M_q - g \cos \theta_0 - g \sin \theta_0 - \frac{g \sin \theta_0 M_{\dot{\alpha}}}{V_0} + \frac{\Delta V}{V} + \frac{\Delta \alpha}{V} + \frac{\Delta \theta}{V} + \frac{\Delta h}{V}$$

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