Design, Analysis and Research Corporation (DARcorporation)

ERRATA: Airplane Aerodynamics and Performance

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(Errata Revised May 4, 2018)

Please check the website www.darcorp.com for updated errata

cover & title page — 'Warren S. Bellows Distinguished Professor' should be 'J.L. Constant Distinguished Professor'

page 7, Equation (1.14) — Should read: $\frac{\rho}{\rho_1} = \left(\frac{P}{P_1}\right)\left(\frac{T_1}{T}\right) = \left(\frac{T}{T_1}\right)^{\left(-\frac{1}{aR}-1\right)}$

page 7, Equation (1.15) — Should read: $\frac{T}{T_O} = 1 + \frac{ah}{T_O} = 1 - 6.875\text{x}10^{-6} h$

page 62, Equation (3.25b) — Should read:

$$c_x = \frac{X}{\bar{q}c} = \int_0^1 \left(c_{p_{\text{upper}}} \frac{dz_{\text{upper}}}{dx} - c_{p_{\text{lower}}} \frac{dz_{\text{lower}}}{dx} \right) d\left(\frac{x}{c}\right)$$

page 86, Figure 3.27 — Last Figure should be 'g' instead of 'f'

page 105, Figure 4.9 — '$e = \frac{1}{\pi Ae}$' should be '$\frac{1}{\pi Ae}$'

page 110, Line 3 — 'FAR*23' should be 'FAR 23'

page 111, Figure 4.13 — Symbols for λ=0.5 and λ=0.2 should be reversed

page 129, Line 18 — Should read '… pure canard and three-surface airplanes can be found in Ref.4.10, pages 344-353 and…'

page 144, Figure 5.6b — 'S = 27.0 ft' should be 'b = 27.0 ft'

page 187, Line 26 — 'Figure 5.11' should be 'Figure 5.13'

page 195, Line 5 — Should read:

$$C_{D_{at\ (C_L/C_D)_{\max}}} = 2C_{D_{\min}} + \frac{2C_{L_{min.drag}}^2}{\pi Ae} - \frac{2C_{L_{min.drag}}}{\pi Ae}\sqrt{\pi AeC_{D_{\min}} + C_{L_{min.drag}}^2}$$

page 223, Equation (6.12a) Should read: $s.f.c = 0.454\left(SHP_{t.o.}\right)^{-0.055}$

page 223, Equation (6.12b) Should read: $s.f.c = 0.525\left(SHP_{t.o.}\right)^{-0.079}$

page 289, Line 12 'thank' should be 'than'

page 316, Line 2 'Figure 7.18' should be 'Figure 7.26'

page 318, Line 1 'near field' should be 'far field'

page 319, Line 23 '110.5' should be '100.5'

page 326, Figure 7.29 Y_1 should be measured from the X-axis, not the lower surface.

page 327, Problem 7.5 '$V_s = \sqrt{1+\frac{S}{A}C_D}$' should be '$V_s = V\sqrt{1+\frac{S}{A}C_D}$'

page 333, Line 5 Should read '...assumed that the airplane…'

page 335, Equation (8.10) Should read: $-D - W\sin\gamma = 0$

page 341, Equation (8.30) Should read:

$$RD_{\min} = \sqrt{\frac{W}{S}\frac{2}{\rho}\frac{1}{\left(C_L^3/C_D^2\right)_{\max}}} = \sqrt{\frac{W}{S\rho}\frac{10.67}{\pi Ae}\sqrt{\frac{C_{D_o}}{3\pi Ae}}}$$

page 359, Line 14 Should read '... Eqn (8.59) shows that at ...'

page 361, Figure 8.20 The horizontal axis of bottom-right chart should have a label 'Angle of Attack, α (deg)'

page 361, Figure 8.20 3-view drawing of F-106 missing

page 375, Equation (9.5) '$\cos\gamma \approx 0$' should be '$\cos\gamma \approx 1$'

Page 399, Line 4 '$C_D/C_L^{3/2}$' should be '$C_L^{3/2}/C_D$'

page 404, Equation (9.68) Should read: $ds = \int_{t_1}^{t_2} V\cos\gamma dt \approx V_{ave}\left(t_2 - t_1\right) = R_{CL}$

page 409, Line 7 should read '…the time-to-climb can be evaluated…'

page 421, Equation (9.84) The factor of '0.567' is good for British units only

page 423, Equation (9.87) The factor of '-0.133' is good for British units only

page 447, Line 4 'wing' should be 'wind'

page 450, Line 6 'A=2.20' should be 'A =2.02'

page 450, Line 6 '$h/\overline{c} = 0.33$' should be '$h/\overline{c} = 0.329$'

page 467, Equation (10.48) '$\frac{1}{2}a_{g_{\text{ave at } V=V_{LOF}/\sqrt{2}}}$' terms should be

'$\frac{1}{2a_{g_{\text{ave at } V=V_{LOF}/\sqrt{2}}}}$',

page 467, 2nd line of Equation (10.48)

left side of equation: $$\frac{1}{2a_{g_{ave\ at\ V=V_{LOF}/\sqrt{2}}}}\left[V_{LOF}^2 \pm 2V_w V_{LOV} - V_w^2 + 2V_w^2\right] =$$

right side of equation: $$\frac{1}{2a_{g_{ave\ at\ V=V_{LOF}/\sqrt{2}}}}\left(V_{LOF} \pm V_w\right)^2 =$$

page 477, Figure 10.27 For the Take-off Weight vs Balanced Field Length plot, the top curve is for Sea Level and the bottom curve is for an altitude of 8,000 ft.

page 491, Line 8 'V_A' should be 'V_{S_L}'

page 509, Line 20 'looses' should be 'loses'

page 517, Line 2 Should read '…maximum endurance occurs when flying…'

page 569, Line 8 Should read '… the definition of the weight W_i: it is the airplane weight…'

page 590, Figure 12.8 The label "W=100,000 lbs" should be referenced to the middle curve.

page 690, Chart D5	Change vertical axis label from ‘PNL’ to ‘ΔPNL’
page 691, Chart D6	Change vertical axis label from ‘PNL’ to ‘ΔPNL’
page 692, Chart D7	Change vertical axis label from ‘PNL’ to ‘ΔPNL’
page 693, Chart D8	Change vertical axis label from ‘PNL’ to ‘ΔPNL’