5) For case 5, $1.155 < t_{11mi}$: the ceiling, best range, and $v = 3^{1/4}$ are in the stratosphere.

For cases 1–5, Fig. 1 shows X/X_R as a function of σ_{11}/σ and t_{11mi}, and Fig. 2 gives v as a function of σ_{11}/σ and t_{11mi} (note that σ_{11}/σ increases as h increases). In Figs.1 and 2, lines for ceiling, best range, and $v = 3^{1/4}$ are represented. Finally, in Fig. 3, altitudes for ceiling, best range, and $v = 3^{1/4}$ are shown as functions of t_{11mi}.

Conclusions

The best-range altitude for a jet-propelled aircraft with a constant altitude–constant lift coefficient flight program is neither the absolute ceiling altitude nor the altitude in which $v = 3^{1/4}$ for maximum thrust setting. The dimensionless maximum thrust in the tropopause based on the initial weight (t_{11mi}) appears as the unique and universal parameter to determine the exact values of ceiling range, best range, ceiling altitude, and best-range altitude. Because of the different models applied in the troposphere and stratosphere for thrust and specific fuel consumption, the best range is placed as follows: in the troposphere when $t_{11mi} < 1.033$, in the stratosphere when $t_{11mi} > 1.061$, and in the tropopause when $1.033 \le t_{11mi} \le 1.061$. Finally, the difference between the absolute ceiling altitude and the best-range altitude is always 375 m, if the ceiling and the best range are in the stratosphere ($t_{11mi} > 1.061$), and the difference depends on t_{11mi} for the other cases, but maintains the same order of magnitude, e.g., for $h_c = 11{,}000$ m, $h_c - h_{\text{br}} = 365$ m and for $h_c = 8000$ m, $h_c - h_{\text{br}} = 398$ m.

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Errata

Improvement to Numerical Predictions of Aerodynamic Flows Using Experimental Data Assimilation

G. Barakos, D. Drikakis, and W. Lefebre
University of Manchester,
Manchester, England M60 1QD, United Kingdom
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THE authors’ affiliation should have been cited as UMIST, Manchester, England M60 1QD, United Kingdom. Also, D. Drikakis’s footnote should have read: Lecturer, Mechanical Engineering Department, P.O. Box 88; currently Reader (Associate Professor), Queen Mary and Westfield College, Engineering Department, University of London, London, England E9 4NS, United Kingdom. Senior Member AIAA. AIAA regrets these errors.