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Performance reduction for aircraft with turbo-props. "Non-dimensional" graphical method. Range and endurance.

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PERFORMANCE REDUCTION FOR AIRCRAFT WITH TURBO-PROPS. "NON-DIMENSIONAL" GRAPHICAL METHOD. RANGE AND ENDURANCE

1. NOTATION AND UNITS

N	compressor speed	rpm
p	pressure	lbf/ft^2
Q	fuel flow	gal/hr
R	specific air range	n.mile/gal
T	temperature	K
T_4	jet pipe temperature	K
V	true speed of aircraft	knot
V_i	equivalent airspeed = $V\sqrt{\sigma}$	knot
W	aircraft weight	lbf
δ	relative pressure, p/p_0	–
θ	relative temperature, T/T_0	–
ρ	density	slug/ft^3
σ	relative density, ρ/ρ_0	–
ψ	"non-dimensional" engine performance parameter, for example T_4/θ (see ESDU PERF RT 1/0, Reference 1)	–

Subscript

a	denotes ambient or test conditions
s	denotes value in International Standard Atmosphere
0	denotes value at sea level in International Standard Atmosphere (ESDU 68046, Reference 2, gives numerical values)

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