GENERAL SPECIFICATIONS AND DATA: VISCOUNT 700 AND 800

PERFORMANCE UNDER I.C.A.N. CONDITIONS

	Viscount 700	Viscount 800
Maximum cont. speed	320 m.p.h. at 22,500ft	312 m.p.h. at 20,000ft
Recommended economical speed ...	300 m.p.h. at 20,000ft	290 m.p.h. at 16,000ft
Consumption at recommended speed and height	282 Imp gal/hr	330 Imp gal/hr
Time to recommended height	38 min	35 min
Distance to height	132 miles	130 miles
Sea-level climb at a.u.w....	1,275ft/min	1,120ft/min
Climb on 3 engines at 5,000ft	550ft/min	400ft/min
Service ceiling	28,700ft	25,600ft
Take-off to 50ft (still air)	4,800ft	5,490ft
Take-off to 50ft (30 m.p.h. head-wind)	3,000ft	3,420ft
Landing from 50ft	2,670ft	3,360ft
Stalling speed at landing weight (47 deg flap)	97.5 m.p.h.	106 m.p.h.

PAYLOAD/STAGE-LENGTH

Typica lpayload versus stage-length (allowing 45 min stacking at 5,000ft and 230-mile diversion):

	Payload (lb)		Range (miles)
Viscount 700	13,600	...	350-700
	11,900	...	1,100
	8,400	...	1,550
Viscount 800	16,100	...	350
	13,400	...	700
	10,300	...	1,100

DIRECT COSTS

Estimated direct operating cost (assuming 3,000 hr utilization and fuel-cost of 17.7d/gall):

Viscount 700.—48-seater: 1.05 pence per passenger-mile at 1,400 miles; 62-seater: 0.85 pence per passenger-mile at 1,000 miles, 9.5 pence per ton-mile at 1,000 miles.

Viscount 800.—66-seater: 1.0 pence per passenger-mile at 600 miles; 82-seater: 0.85 pence per passenger-mile at 400 miles, 10 pence per ton-mile at 400 miles.

DIMENSIONS, WEIGHTS AND TANKAGES

	Viscount 700	Viscount 800
Power units	Rolls-Royce RDa.3 Dart (1,400 b.h.p. + 365 lb thrust)	Rolls-Royce Dart RDa.5 (1,540 b.h.p. + 400 lb thrust)
Passenger capacity	40-62	66-82
Wing span	93ft 8½in	93ft 8½in
Gross wing area	963 sq ft	963 sq ft
Overall length	81ft 2in	94ft 6in
Cabin width	9ft 8in	9ft 8in
Cabin height	6ft 5in	6ft 5in
Cabin volume	2,474 cu ft	3,132 cu ft
Crew requirement*	2+2	3+3
Gross weight	58,500 lb	65,000 lb
Wing loading at gross weight ...	60.75 lb/sq ft	67.5 lb/sq ft
Power loading at gross weight ...	9.5 lb/e.h.p.	9.6 lb/e.h.p.
Maximum disposable load	25,425 lb	25,888 lb
Maximum payload	13,989 lb	16,820 lb
Landing weight	52,000 lb	61,000 lb
Fuel	1,720 Imp gal 2,066 U.S. gal	1,720 Imp gal 2,066 U.S. gal
Water/methanol	75 Imp gal 90 U.S. gal	75 Imp gal 90 U.S. gal
Oil	18.75 Imp gal 22.5 U.S. gal	18.75 Imp gal 22.5 U.S. gal

*Suggested complement, flight crew plus cabin attendants.

In the case of the Viscount 700, figures quoted here are based on the "developed" a.u.w. of 58,500 lb, at which the aircraft is now offered, and 13,600 r.p.m. is taken as the probable cruising figure for the Dart turboprops. Early Series 701s delivered to B.E.A. will be limited to 56,000 lb and, initially at least, schedules will be based on 13,300 r.p.m. Disposable load would, of course, vary according to the standards of furnishing and equipment required by a specific operator. Units quoted in range measurements and cost figures are statute miles and short tons.

TOWARDS TURBOPROSPERITY . . .

increased consumption, and allows much greater payloads to be carried on the longer ranges. Assuming that under similar circumstances the operating costs of the two airliners are approximately the same, there remain several other conditions which strengthen the case for the Viscount. It seems certain that the Viscount will not only please more passengers, for reasons outlined earlier, but that it will also carry more—up to 62, in fact. By reducing seat-pitch from 36in, as in the standard 44-seat version, and at considerable sacrifice to freight, galley and toilet space, the Convair can carry 56, but such a layout is not likely to be adopted by many operators. Aisle-width is 28in in a luxury 40-seat Viscount and 17½in in a five-abreast high-density version, compared with 17in in all Convair 340s; the narrower fuselage of the latter aircraft does not permit five-abreast seating.

At a basic cost of £235,000, the British aircraft is about £15,000 less expensive than its rival. While the four-engined aircraft may entail greater expenditure on spares and crew costs, it is claimed that the use of turboprops, with consequently decreased wear and tear due to vibration, will reduce overhaul and maintenance costs by 25 per cent, making it only slightly more expensive than a twin in this respect.

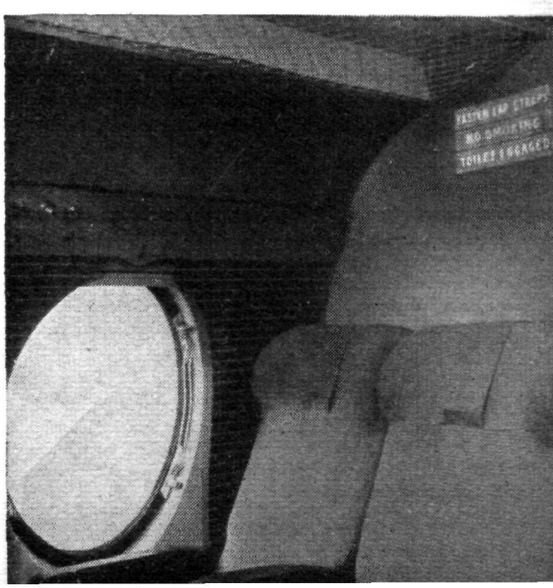
As a piston-engined aircraft is certain to become obsolescent more rapidly than the turbine-powered type, it is assumed that the Viscount will depreciate over a longer period; another significant point is that at least one insurance company has quoted reduced rates for the Viscount on the basis of safety and airworthiness performance. Although the turboprops consume more fuel, the use of kerosine in the four Darts means that hourly cruising costs are not likely to be much more than for two piston engines of comparable power, and oil costs are negligible (the Viscount's power units consume less than half a pint per hour).

It is quite likely that when operating on stage lengths shorter than 600-800 miles the Viscount will take off at below the permitted weight of 58,500 lb. The maximum permissible payload (14,000 lb. in the case of the Series 700) is determined by subtracting the weight empty, including fuel reserve, from the zero fuel weight—the highest weight at which a landing is permissible with empty tanks (when the wings are normally under the most critical condition). Operators will thus be able to carry excellent fuel reserves without sacrifice of payload on fairly long stages. Decline in permissible payload over ranges between 860 and 1,200 miles is less than 3,000 lb. Increased strengthening of the wings to allow bigger payload for the very short stages would have been impractical, since the figure of 14,000 lb is matched to the capacity of the fuselage, and weight-carrying ability on the longer stages would have been penalized by the added structure weight.

The "engine-out" abilities of the Viscount have been strikingly demonstrated at the last few Farnborough Shows, on occasions two of the four Darts have been feathered during initial climb and the aircraft has even flown past with three inoperative. Although the Viscount is to be operated commercially at much higher weights, a very handsome margin of performance will be available in the event of power failure at take-off or during any part of the flight. As an I.C.A.O. category "A" type, the Viscount is certificated under the latest British performance regulations, which represent the most stringent regulations yet enforced.

Flight-manual figures show that the Viscount can meet the British airworthiness requirements for take-off and initial *en route* performance at a temperature of I.S.A. + 15 deg C and an airfield height of over 7,000ft at its full weight of 58,500 lb. By using water/methanol injection to restore power this performance is retained at I.S.A. + 30 deg C. This is so effective that B.E.A. expect take-off weight of their Viscounts to be unaffected by airworthiness requirements, except, possibly, at one European airport in unusually high temperatures. Under the conditions encountered by most operators only very small reductions in take-off weight, at the most, will provide the required high-temperature/altitude performance. *En route* requirements are also met by the Viscount at economical weights. B.E.A.'s high operating standards lay down that "in the event of any two power-units becoming inoperative at any point on a route or a planned diversion, the aircraft will be capable of continuing the flight . . . so as to reach a height not less than 1,000ft above the terminal airfield."

Large numbers of route analyses have been prepared by Vickers-



Thanks to the unusually large windows, the relative smoothness and silence offered to Viscount passengers is supplemented by an excellent view of land- and cloud-scapes.