Jet/Tu rboprop s eCOnomiCS(Saab 2000 direct operating cost equals 100 percent)

120

115

ir t

o 2 o <5

105

100

• Canadair Regional Jet

200 n.m. sector

| Canadair Regional Jet

500n.m. sector

Saab 2000

iFokker 50

Dash 8-300

30min 60min 90min Block time

Fokker 50

Dash 8-300

Saab 2000
120min 150min

Saab operating-cost predictions show jet economics to poor advantage, particularly at short ranges. The figures assume first costs of $9-5 million for the Dash 8-300, $10-5 million for the Fokker 50, $11 million for the Saab 2000, and $13 million for the Canadair Regional Jet. The economics of the slower turboprops suffer because the Swedish aircraft claims comparable fuel-burn per hour, but greater speed. This is offset by the lower capital cost of its turboprop competitors.

Deja vu
Fokker decries the jet-powered 50;

seater,
saying: "We've been there before with the
614". Fokker says that development, costs for a new 50-seat jet must be $1 billion, and the economics would not make sense even if fuel were free. Saab is equally convinced of the argument, having conducted its own jet studies and decided to invest a relatively modest $300 million in the 2000.
There were specific design deficiencies in the old VFW-Fokker jet, however. Speed was a respectable 385kt, but it was limited to a cruising altitude of 20,000ft (extremely low, and therefore uneconomical, for a jet) because of a poor high-ahitude climb rate and low cabin pressure differential. By contrast, the new regional jet projects cruise at the tropopause and, although the 2000 normally cruises at 20,000ft, it too can

reach 35,000ft. The range of the 614 was a poor 570 n.m. when carrying its maximum passenger load under International Stan-dard Atmosphere conditions. This compares with 1,200 n.m. for the Saab 2000. Although this capability is unlikely to be used except on delivery flights, it permits the Saab to fly multiple shorter sectors without refuelling. Block fuel-burn of the 614 was roughly twice the Saab's consumption of 1,2001b on a 200 n.m. sector, and double the 2,5001b it burns over 500 n.m. The 614 had 3:1 bypass-ratio turbofans, compared with the more econ-omical 5:1 units of the new regional jets. The short, fat fuselage of the 614 seated 44 passengers, four abreast, at 32in pitch, compared with 50 passengers, three abreast, at 32in pitch, for the Saab. The 614 offered 1 in-wider seats and a 3in-deeper aisle height, however.

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market opportunity—the growing demand from European business travellers to bypass congested hubs by flying longer (300 n.m. to 600 n.m.) direct inter-regional routes between secondary airfields.
The company believes that its 2000, a stretched 340 powered by two new 5,500 s.h.p. high-technology turboprops, can deliver near-jet speed (Mach 0-6/360kt) to tackle these longer routes competitively, and enable it to operate as many sectors per day as the jets. The new aircraft should also have better economics than its slower competitors, according to Saab, even on 200 n.m. sectors, because its speed is sufficiently high to offset its 10 per cent higher fuel-burn per hour.
Marsh says that on a 500 n.m. sector its block time of 102min will be only 12min greater than that of the Canadair Regional Jet, but it will burn 30 per cent less fuel for a minimum 15 per cent direct-operating-cost advantage per seat.
In doing so, it would leave the current 50-seat turboprops lagging half-an-hour behind, and demonstrating noticeably inferior seat-mile costs because of their longer flight times, Saab claims. Fokker counters by saying that the limited headroom of the long, thin Saab 2000 cabin will restrict passenger movement, and therefore reduce its appeal.

High growth
The US and European regional airlines are growing at twice the rate of the majors, and will continue to expand at about 10 to 12 per cent to the end of the century, according to Saab. The establishment of a common Euro-pean market in 1992 is already creating a stimulus to place orders for aircraft in today's dollars against anticipated demand, it says. , Hub-feed routes will continue to dominate the US regional market where most carriers now fly under the colours of major partners. Although European regionals are also having to develop in accordance with the wishes of the majors, providing primary and secondary hub feed in return for integration into computer reservation systems with common designators, cross-border hub bypass routes of two to three flying hours will become increasingly important for business travellers.

Already, Saab 340s flying in Air France colours provide direct services on several European routes. These include Toulouse-Brussels, which the turboprops fly in 2jhr by cutting out an annoying and time-consuming stop at Paris. That stop stretches a conventional jet journey to 4hr lOmin. Nantes-Dusseldorf is even more prob-lematical by jet, taking 5hr via Paris but only 2hr 5min on a direct flight by 340.
Saab, however, accepts that 2^hr is the passenger-acceptance limit for turboprops, so more speed is needed to unlock the longer-range market.
The problem for jets is that, while their

economics become increasingly competitive with those of a fast turboprop on sectors of more than 500 n.m., their short-range economics are, to quote Saab, "disastrous". This is partly because the proportion of block fuel used inefficiently by a jet during taxiing, climb, and descent rises to as much as 40 per cent when stage length falls to 200 n.m., says the Swedish company.
At such ranges, neither the speed of the

jets nor that of the Saab 2000 are of much significance, but Saab maintains that, with a fuel-burn per hour close to those of the slower turboprops (despite its much higher installed power), the Saab 2000 will offer
customers the flexibility to fly a variety of
routes with maximum economy. British
Aerospace, whose 64- to 70-seat ATP
turboprop is attacking the top end of the
same market, believes that higher speeds are

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