freighter guide: regional Freighters

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If the regional turboprop manufacturers were placing their faith in the freight market to generate large orders for used aircraft they will have been disappointed. The freight market, particularly in North America, has been slow since 1999 and shows little sign of an immediate recovery.

Michael Magnusson, president of Saab Aircraft Leasing, which is offering a conversion of the Saab 340, sums up the situation. He says: ? Although we have had, and continue to have, a lot if interest in our aircraft, few are willing to commit at this stage. One problem has been UPS, which is re-negotiating some of its contracts so a few of our prospects are holding off until these negotiations get sorted out.?

He adds: ?The only consolation is that no-one else is doing any business either. The only real deal we have lost was Skylink in Canada, which went to the Beech 1900 because it was priced so that we simply could not compete. However, we have a number of offers on the table so I am fairly confident our prototype will be placed before the end of the year.?

A senior source at one US cargo operator says that times are very hard, not least because of the slump in the car market. He suggests also that courier companies are having a tough time and have lowered their pricing to ?ridiculous levels?. He adds: ?The problem is there is always someone who needs the money badly enough to meet aircraft payments and they will even fly at a loss just to get cash flow. People do not have the money to invest in replacing aircraft; in fact they are struggling to keep older ones flying.?

All this points to a gloomy short-term outlook. But the broader picture looks brighter and there is no doubt that there are significant numbers of old-generation aircraft, such as F27s and BAE 748s, that need replacing.

The replacement market

BAE estimates that there are more than 200 older five to six-tonne freighters in service (see Table 1), with the biggest fleets operated in Europe and North America, by long-established specialist cargo carriers.

Table 1: BAE Systems? view of replacement freighter market

Type Payload (T) All freight QC Total

CV580 7.4 46 46

CV600 7.4 13 13

F27 5.8 89 9 98

BAE 748 6.0 39 18 57

FH227 5.9 3 4 4

YS 11 6.1 8 8

Source: BAE Systems

Although there are a number of active programmes, including Saab?s offering of a 340A conversion, the main protagonists in the field are ATR and BAE Systems, with the latter?s asset management arm promoting the ATP freighter. Although there have been some successes, there has as yet not been a dramatic surge in orders for any of the types on offer.

There is one ATP freighter with a large freight door in service with West Air Sweden. West Air has a further 10 ATPs with E-class bulk loading interiors. In addition, BAE Systems is committed to the conversion of 10 ATPs into the large freight-door configuration. This conversion will be carried out by Romaero, the Romanian commercial aerostructures manufacturer. The first of the aircraft is due to come out of the company?s Baneasa factory early in 2004.

Despite the impact of severe acute respiratory syndrome, Asia continues to be heralded as a lucrative market in the medium term. ATR is

reported to be in talks with several Asian carriers interested in operating the ATR 42/72 as a freighter. ATR and its partner, Aeronvali, launched a conversion with a full cargo door for the ATR 42 and 72 in 2002. The suitability of the ATR platform as a freighter is confirmed by the existence of several independent conversion programmes that do not include a freight door.

As with all freighter programmes, the intentions of the major US package operators are crucial. Perhaps the most significant factor in the market is FedEx?s endorsement of the ATR platform. The US company is in the process of acquiring 19

ATR 42s from American Eagle and eight from Continental Airlines to replace its fleet of Fokker F27s. There is speculation that FedEx may decide to concentrate on 757s rather than splitting its fleet renewal between 737s and 757s. If this proves to be the case, this would lead to an increased demand for the Franco-Italian turboprop but would presumably mean that the operator would look at the larger ATR 72 variant.

The ATR/Alenia partnership has so far enjoyed greater success, with the larger model having placed an ATR 72 with Switzerland?s Farnair. As yet the partnership does not have a launch customer for the full freight door version of the smaller ATR 42 variant.

The wider market

There is a significant gap between the largest turboprops and the most obvious near-term candidate for freighters in the narrowbody market. Jet competitors include 146 and 737 conversions: the 146 is an established freighter with new-build aircraft having been delivered to TNT; no 737-300 models were built as freighters, but some have been adapted to cargo and convertible use.

Short-haul freight operations are notoriously difficult to make economically viable with the key problem being the low utilization that is typical of such operations. The situation is analogous to the problem of short-haul operations for regional jets, where on shorter sectors it is difficult to amortize the high capital cost of the aircraft. However, the problem is even worse in the freight market. Whereas regional jet passenger operations would expect to obtain at least 2,500 block-hours, many freight operators are lucky if they can achieve 800. This low utilization means that it is virtually impossible to make new aircraft work on regional sectors. The only example of new aircraft being sold in this role is the 146QT deal between BAE Systems and TNT.

In this market there is no doubt that the lower capital costs of the turboprop and its intrinsically better efficiency on shorter sectors provides a niche market for the turboprop manufacturer. These lower costs are borne out by our analysis below. This is good news for financial organizations and leasing companies faced with a potential surfeit of turboprops. As always, aircraft availability is a key issue and, despite its small fleet, the ATP has an advantage in this area.

Although the passenger turboprop market is unlikely to witness a major upturn in demand, it is showing some signs of life (see ?Propping up the market?, Aircraft Economics, July/August, page 27). The fact that ATR continues to manufacture new aircraft will probably have a dual effect. Used aircraft values are likely to remain firmer, but there may be used aircraft available from the manufacturer. This is often a consideration made by smaller operators, although its benefits are often qualitative rather than quantitative.

Assumptions for cost analysis

The comparison of jets and turboprops is complicated by the widely differing operating speeds. The calculation of aircraft utilization is crucial to determining the impact of capital cost. Assuming the same utilization for jets and turboprop aircraft unduly favours the jet aircraft, because it takes for granted that all of the time gained by higher cruise speeds can be used to fly additional sectors. In practice this is not possible because turn-round times remain unchanged and the time gained can be insufficient to operate an additional sector within a realistic operating day.

Conversely, using a fixed number of trips gives no credit for the jet?s increased productivity. The Association of European Airlines developed a technique to account for this by means of a formula. A reference annual utilization is set and then divided by an aircraft?s block time for a given sector length, plus a constant to determine the number of trips of that sector length that can be flown in a year. The reference utilization and constant are, to some extent, arbitrary, but for regional freighter aircraft 1,500 hours and 30 minutes respectively provide good results. This approach is used in our analysis. It has the benefit of increasing the jet?s advantage on the longer sectors, which reflects what would happen in reality.

Fuel cost is based on Aircraft Economics? view of manufacturers? block fuels normalized to equivalent operating conditions and reserve fuel policies. We have used a fuel price of 95 cents per US gallon. Crew costs are constructed from a salary and expenses structure of $5,000 a month for a captain and $3,500 for a first officer. Two crews per aircraft are assumed (a low figure reflecting the low utilization achieved in regional freight operations). Landing fees and airport navigation charges are based on a charge per landing of $10 per tonne of maximum take-off weight. En-route air navigation charges are based on Eurocontrol?s scale of charges. Maintenance costs are based on Aircraft Economics?

database. Capital cost is calculated on Aircraft Economics? view of likely capital costs for the various types, A monthly financing cost of 1% of the aircraft?s price is assumed and is taken to include the capital costs of a spares package. Hull insurance is assumed to be 1% per annum of aircraft list price to reflect the increased premiums in the current market.

The results of our analysis show that the relative economics of the various aircraft under consideration vary significantly depending on the sector length. This is particularly true when capital costs are included in the equation. This reflects the greater possibility for the higher priced jets to amortize their capital costs on the longer sectors.

Economics on a 200km sector

On this sector length, the jets are very expensive to operate and only the 737, with its much higher payload, is able to demonstrate a variable tonne-km cost lower than the ATR 72. However, with a trip-cost close to double that of the baseline turboprop, it is difficult to envisage how the 737 could compete in thinner markets on this sector length. With both higher trip-costs and tonne-km costs than the ATR 72, the 146 is unlikely to be competitive in any circumstances without a dramatically lower capital cost. The ATP, however, does offer a significant total direct cost saving if the assumed price differential of $3 million is maintained.

Economics on a 500km sector

As would be expected, the jets start to become more competitive on this longer sector and both the 146 and 737 demonstrate lower tonne-km direct operating cots than the ATR 72, but neither aircraft has low enough trip costs to threaten the turboprop superiority for low-density routes. This is a better sector length for the 146, where its trip cost shows an advantage over the 737 and its total tonne-km cost is lower than the ATR 72 (but higher than the ATP).

Economics on a 1,000km sector

The competitiveness of the 737 is further reinforced on this sector. The low trip cost of the ATR 72 still makes it attractive. There may be a minor impact on yield attributable to the long block-time but, unlike in the passenger market, there is no reason why the turboprop cannot operate this length of sector. However, it is questionable that there is room for an aircraft between the turboprops and the 737s on this sector length, particularly in a growing market where even modest growth rates would quickly justify the trip costs of the larger jet.

The upshot

A combination of the 737 and a larger turboprop looks likely to satisfy most markets. The ATR 42 is attractive if the market really is too small for the ATR 72/ATP, but if the example of the passenger market is followed, the larger ATR 72 is likely to outsell its smaller family member.

On a total operating cost basis, the ATP looks an attractive prospect on most sector lengths if it is aggressively priced in accordance with our assumptions. Of course an operator?s ultimate choice will be based on a more complex set of evaluations than shown in our analysis. Judgments on operational suitability, reliability and aircraft availability, as well as pure cost, will influence the choice of aircraft. In that respect the freight market is no different to the passenger sector.

