

747-400F grabs attention with order spree

With up to 250 747-200/-300 passenger and combi aircraft potentially available for freight conversion, it is perhaps strange that the 747-400Fs are enjoying a recent spate of large orders.

Up to 1999, the 747-400F had gained 75 firm airline and lessor orders. The majority were concentrated among seven airlines: Cargolux, Asiana, Korean, Singapore Airlines (SIA), China Airlines, Cathay Pacific and Atlas Air. Noticeably, most of these are Asia Pacific airlines, which have to operate long distance routes to the US and Europe. They are also experiencing high growth rates.

Orders have also been steady in 2000, with Atlas adding four, taking its total to 16 aircraft. SIA also added six orders this year.

This spree of orders has raised curiosity among the freight fraternity. The 747-400F's list price is between \$177 million and \$195 million, although airlines are probably able to get orders in the region of \$125-140 million.

This is still a large sum to pay, when the total build cost of \$35-40 million for a high gross weight- (HGW-) converted passenger or combi 747-200 is considered.

The 747-400F's net structural payload is 232,970lbs, compared with the 747-200SF's 198,830lbs.

Put in perspective, the 747-400F's price tag is four times higher for a

17% higher payload capacity.

The economics of freight mean that aircraft price tag, lease rate and depreciation, dominate fleet plans and aircraft selection. This is why the recent orders for 747-400Fs and relatively small rate of used 747 freight conversions has caught the attention of the freight sector.

The 747-200 is particularly economic considering its market values. The limited applications in the used market mean numbers exceed demand. Aircraft values have dropped to the equivalent of the market values of four engines plus one or two million dollars. Hence, high gross weight JT9D-7Q/-7R4G2 powered or CF6-powered aircraft can be acquired for \$8-15 million. This keeps total build costs low, especially when compared to the amount of freight capacity the aircraft offers.

Lease rates of the 747-200SF have also come down in recent years, following continued surplus of passenger/combi aircraft and the entry of the younger freight converted 747-300 onto the market.

The HGW versions of 747-200SF also have the ability to operate 90% of most carriers' routes, and so should offer lower available ton-mile (ATM) costs than the 747-400F.

The 747-400F's high price and finance charges means it can only be justified by airlines with fixed contracts and which

operate the longest missions and generate high aircraft utilisations of up to 5,000 flight hours (FH) per year.

The 747-400F's customers are all clearly in a position to benefit from fixed contracts and generate high aircraft utilisations. Operators of converted 747 freighters all have different operations, which generate lower loads and levels of aircraft utilisation.

A brief analysis of the unit costs per ATM on the 747-200SF and 747-400F reveals that the new aircraft can indeed offer a cost advantage in the right operating conditions and with sufficiently high loads.

The 747-200SF flies sector lengths averaging 2,500nm, while the 747-400F should be compared on an average mission of 3,500nm. The 747-200SF will generate about 3,500FH per year in most operations, while the 747-400F can generate 5,000FH.

The 747-400F will benefit from better fuel efficiency and a smaller flight crew. The 747-400F will also have lower maintenance costs of about \$1,800 per FH. This compares to about \$2,300 per FH for the 747-200SF. This is mainly explained by the -200SF's higher engine-related maintenance costs, but also marginally higher airframe check, line maintenance and component repair charges.

The 747-400F's cash operating cost advantages have to be set against its finance or lease costs. New aircraft have benefited in recent years from financing techniques such as enhanced equipment trust certificates (EETCs). These have reduced monthly lease rate factors from more than 1-1.1% of acquisition cost to as low as 0.7-0.8%. This puts the 747-400F's monthly rate at \$875,000-1,000,000 per month.

This compares with a rate of \$1,250,000-1,350,000 per month which would have been closer to that previously paid for the 747-400F. The new low lease rate is another reason why 747-200SF lease rates have come under pressure.

The lease rates for the two aircraft mean the total unit costs for the 747-200SF and -400F have come closer together. When operated at a 80% load factor and on the mission lengths at rates of utilisation described, the 747-400F is able to generate fuel, maintenance, flight crew and lease costs of 16 cents per ATM. This compares to the 747-200SF's rate of 20 cents. 

A new 747-400F can be justified on economic grounds when considered against leasing a used 747-200SF. This can only occur, however, when fixed contracts are in place which operate the longest missions and allow high load factors and aircraft utilisations. Lease rates of new aircraft have also been lowered by recent financing techniques.

