New conversion programmes for 747-400 & 767-200 launched by Bedek Aviation & Aeronavali.

With a continuing fall in aircraft values, new passenger-to-freighter programmes have been launched for the 747-400 & 767-200. First converted aircraft should enter service in 2005.

Bedek Aviation has released details of its 747-400 freighter conversion programme. Bedek expects to induct the first aircraft before the end of 2004, and deliver the first aircraft by the third quarter of 2005. Once production has stabilised, Bedek estimates it can convert six to nine aircraft per year.

Timing of a freighter conversion programme relies on values of passenger-configured aircraft falling to a level that makes the total cost of preparing a 747-400SF for service low enough to make operation economic for target freight airline customers. Estimates are that the 747-400SF could command lease rates of up to $600,000 per month. With a lease rate factor of 1.2%, total cost of preparation for service could not exceed much more than $50 million.

Bedek's conversion has a price of about $18 million for a passenger-configured aircraft, and is less than $20 million including a cargo handling system. Conversion would be more efficient when combined with a D check, but this would add to the cost. Downtime for a passenger aircraft when combined with a D check is expected to be about 120 days once production has reached maturity. Downtime and conversion cost will be less for combi- configured aircraft, although replacement of 80 floor beams is still required.

Bedek estimates that 747-400 market values will have dropped to about $32 million by 2006, when demand for conversions will have picked up. Aircraft acquired at this value will have a total cost of preparation to freighter of about $54 million, making the lease rate just about acceptable to airlines.

According to Bedek there are several internal container and pallet configurations for the main and lower decks.

The first option for the main deck is 30 96/100/125-inch containers. The second is for the same number of 88/100/125-inch containers and the third is for 21 10-foot long containers.

The first option provides an internal volume of 20,600 cubic feet. The lower deck can accommodate 32 LD-1 containers, as can the factory-built -400F. Each container has an internal volume of 175 cubic feet, providing a total of 5,300 cubic feet.

Overall, the aircraft has an internal container volume of 26,100 cubic feet.

The basic weight configuration of the aircraft is for maximum take-off weight (MTOW) to be upgraded from the various passenger aircraft weights to 875,000lbs.

The maximum zero fuel weight (MZFW) can be upgraded to 610,000lbs from the passenger aircraft 535,000lbs, 545,000lbs or 565,000lbs.

Bedek will encourage customers to upgrade the maximum landing weight (MLW) of their aircraft to 652,000lbs.

The maximum structural payload of the aircraft is MZFW less operating empty weight (OEW). OEW is lower for PW4000- and CF-80C2-powered aircraft than for those with RB211-524 engines, which will therefore have a lower maximum structural payload.

Bedek estimates the OEW aircraft with PW or GE engines will be in the region of 357,000lbs, thereby giving a maximum structural payload of about 253,000lbs. This is about 3,000lbs higher than the payload of a RB211-524-powered aircraft.

The OEW and structural payloads of the factory-built -400F are 361,100lbs and 248,900lbs. The converted aircraft are therefore expected to have a small payload advantage.

The -400SF's payload is therefore about 15,000lbs higher than the -200SF's. This maximum structural payload can be accommodated in a total cubic volume of 21,600 cubic feet; generating a maximum packing density of 11.7lbs per cubic foot. This is high compared to the densities of most freight. A packing density of 7lbs per cubic foot will generate a volumetric payload of 151,200lbs.

Bedek says the candidate aircraft for conversion are line numbers 726 and higher. About 20 -400s, with line numbers lower than 726, have a lower wing number and so make poor conversion candidates. Removing factory-built -400Fs, this leaves about 426 conversion candidates. About 102 of these have RB211-524 engines, leaving about 320 with PW and GE engines.

Bedek expects about 75% of these, or 240 aircraft, to be converted over an extended period. Bedek will convert the aircraft at a new facility in Rome, New York state.

Boeing has also recently announced its conversion programme for the 747-400. This will have a structural payload, including container tare weight, of about 250,000lbs. Boeing expects to launch its conversion programme by the end of 2004, with the first aircraft expected to enter service in late 2005.

Boeing will provide the engineering, while conversions for the first three aircraft will be performed by TAECO, Xiamen in China.

Container configuration and internal volume will be similar to Bedek's conversion. Although not confirmed, Boeing's conversion is expected to have a list price of $22-24 million.

Boeing estimates that about 980

BEDEK AVIATION 747-400SF SPECIFICATIONS

MTOW lbs	875,000 lbs
MZFW lbs	610,000 lbs
MLW lbs	652,000 lbs
OEW lbs (GE/PW engines)	357,000 lbs
Structural payload lbs	253,000 lbs
Main deck containers-option 1	30 X 96/100/125
Main deck container volume-cu ft	20,600
Lower deck containers	32 X LD-1
Lower deck container volume-cu ft	5,300
Total container volume-cu ft	26,100
Maximum packing density-lbs/cu ft	11.7

aircraft will be required in the large freighter category, including DC-10s and MD-11s, up to 2022. About half of these will be converted aircraft. This implies a higher expected demand for 747-400 conversions than Bedek's estimate.

Now that Boeing is trying to launch its 747-400 passenger-to-freighter conversion programme it remains to be seen whether it will continue 747-400 production, since the majority of sales in recent years have been for freighter-configured variants.

One launch customer for 747-400 conversions is Cathay Pacific, which may convert some passenger-configured aircraft.

Boeing & Aeronavali launch 767-200SF

Boeing and Aeronavali have launched the 767-200SF passenger-to-freighter conversion programme. Boeing, in fact, executed the exclusive license, granting to the Italian company all the rights for the conversions of the passenger 767-200 aircraft to freighter. Aeronavali is currently focusing its marketing effort in order to announce a launch customer for the conversion before the end of 2003. It has already said the first aircraft will be inducted for conversion by the second half of 2004. This will be followed by certification and entry into service of the first aircraft the middle of 2005.

The 767-200 passenger fleet has 16 different maximum take-off weight variants of the 767-200/-200ER, and a varying number of each were built. MTOWs vary between 279,900lbs and 395,000lbs. The most numerous are the 351,000lbs version, of which there are 55.

In addition to a large number of different weight variants, there are also several different wing numbers, engine types and landing gear specifications. The configuration of the original passenger aircraft determines what weight upgrades can be performed on the aircraft during conversion.

Aeronavali is offering two basic models of -200 converted aircraft; the baseline model with a MTOW of 320,000lbs and a high weight variant with a MTOW of 351,000lbs.

The baseline aircraft has a maximum zero fuel weight of 258,000lbs and structural payload of 93,400lbs *(see table, this page)*. The aircraft can carry its maximum payload of 93,400lbs up to about 2,000nm.

The baseline aircraft compares to the A310-300 with a MTOW of 330,700lbs and MZFW of 249,100lbs. This has a structural payload of 86,200lbs, which can be carried about 2,900nm.

A higher weight model of the -200 is offered. Aircraft with the standard MZFW of 258,000lbs have a structural payload of 93,400lbs, and can carry this about 3,200nm.

A MZFW increase to 266,000lbs during modification is under study, and a structural payload would be raised to 101,400lbs *(see table, this page)*. This payload can be carried up to about 2,800nm.

These two versions compares to the A310-300 with MTOWs of 346,125lbs and 361,560lbs, both of which have a MZFW of 251,320lbs and structural payload of 88,400lbs. These aircraft can carry their full payloads about 3,000nm and 3,300nm.

Higher weight models of the -200ER aircraft will range performance longer than the highest weight A310-300 variants. There are more than 90 767-200ERs with MTOWs of 351,000-395,000lbs.

There are two main types of internal container configurations. The first uses 20 88-inch by 125-inch containers, although are modified to go at the front and rear of the aircraft. These have an internal volume of 410 cubic feet. The other 18 standard containers each have an internal volume of 502 cubic feet, providing a total of 9,856 cubic feet for the main deck.

The lower deck has 22 LD-2 containers, each providing 124 cubic feet, taking total underfloor volume to 2,728 cubic feet. Bulk volumes provides a further 430 cubic feet, taking total for the aircraft to 13,014 cubic feet.

This compares to a standard structural payload of 93,400lbs, which would this allow a maximum packing density of 7.2lbs per cubic foot.

The higher specification payload of 101,400lbs allows a maximum packing density of 7.8lbs per cubic foot.

The alternative variant of accommodates 22 88-inch by 108-inch containers. Each has an internal volume of 355 cubic feet. With underfloor LD-2 containers and bulk volume, total volume is 10,968 cubic feet. Maximum packing density is thus 8.5lbs per cubic foot for an aircraft with a standard payload. Aircraft with a higher payload capacity will have a maximum packing density of 9.2lbs per cubic foot.

These two configurations compared to the A310-300 which has a maindeck internal volume of 8,160 cubic feet and underfloor LD-3 volume of 2,044 cubic feet. Total volume on the A310-300 is 10,814 cubic feet; allowing a maximum packing density of 8.1lbs per cubic foot.

Aeronavali says price of the conversion will be less than $10 million, including cargo handling system ,but actual cost will vary with required weight upgrades. The process of conversion will standardise aircraft to one of the two specifications offered by Aeronavali. The cargo handling system may be offered by Ancra.

In addition to freight conversion, cost of aircraft acquisition of maintenance during conversion has to be considered. Market values of older 767-200s are now less than $8million, and it is likely the total production cost will be less than $20 million. A monthly lease rate factor of 1.2% means a lease rental of about $240,000 would be required to justify investment.

The actual market lease rate airlines are expected to bear are in the region of $220,000-240,000, indicating values are now at the right level for conversions to start. The market for medium widebody freighters is expected to be strong, since these should replace a large percentage of large narrowbody types. The 767-200's range capability also strengthens its position. The 767 freighter is already operating with the four airlines in the Lan Chile Group and Tampa Airlines Cargo has selected it to replace its ageing fleet of DC-8s. One of the 767-200SF's main targets is DC-8 replacement. AC

AERONAVALI 767-200SF SPECIFICATIONS

VARIANT	Option 1	Option 2
MTOW lbs	320,000 lbs	351,000 lbs
MZFW lbs	258,000 lbs	266,000 lbs
Structural payload lbs	93,400 lbs	101,400 lbs
Main deck containers-option 1	20 X 88/125	20 X 88/125
Main deck container volume-cu ft	9,856	9,856
Lower deck containers	22 X LD-2	22 X LD-2
Lower deck container volume-cu ft	2,728	2,728
Total container volume-cu ft	13,014	13,014
Maximum packing density-lbs/cu ft	7.2	7.8