

A3YY or A310 lite, which would be another application for the A340-600's new engine.

BOEING PRODUCT STRATEGY

Although seemingly pre-occupied with the 747-X at the moment, Boeing is still intent on developing its other product lines. It is, however, short of engineers, and is attempting to prioritise the developments without overreaching itself. The company hopes to finalise by the end of October a broad-based product development strategy to take into the next century. A massive worldwide recruitment drive is already on for these new products.

Boeing has for some time had a broad definition of its plans for high-capacity aircraft developments, which will be based on the existing 747-400 airframe. A new, enlarged wing and 345kN engines will enable the development of a much higher-capacity 550-seat model (the -600X) with similar range to that of the 747-400 and a very-long-range variant (the -500X), slightly larger than the 747-400, with almost 3,000km more range.

The specific characteristics of these proposals, now dubbed the 747 Major Derivatives (MD), have been fluid over the past 12 months, but Boeing has now set the baseline configuration for the MD. This provides a firm specification with which to secure some form of commitments from customers, and move forward to the programme launch stage. A commitment to launch the two new variants is expected at Farnborough, and a formal launch could be made later this year. Boeing is targeting 2000/2001 for service entry of the first of the two models.

In May, General Electric and Pratt & Whitney announced that they would be jointly developing a new engine for the 747 MD. More recently, Rolls-Royce has confirmed that it would be offering the Trent 900, a development of the 800, on the aircraft.

The cornerstone of the MD is a larger wing of 77m span, designed without winglets, and incorporating leading-edge-slat high-lift devices in place of the existing Krüger/variable camber flaps. Attached to the wing will be four new 345kN engines. The vertical and horizontal tail surfaces will also be increased in size. Boeing recently elected to adopt a fly-by-wire flight-control system for the new models, after pressure from potential airline customers.

With the heavier of the new models weighing in at almost 540,000kg, additional wheels will be needed to reduce pavement loading to an acceptable level. It is now envisaged that a 24-wheel configuration will be used, with the nose gear having an in-line four-wheel unit, while the outboard main gear will incorporate six-wheel bogie units. The main body gear will retain the existing four-wheel bogie configuration.

The larger of the two 747 MD variants, the -600X, will have an overall length of 85m, making it almost 15m longer than the -400. It will carry a typical three-class load of 548 passengers

over distances of 14,340km, some 1,000km further than the 412-seat 747-400. With an overall length of 76m, the very-long-range -500X is about 6m longer than the -400, and will be able to carry 462 passengers over distances of over 16,000km.

Stretched and extended-range versions of the 757 have been on the drawing board for some time, dubbed -300X and -200X, respectively. The 757-300X will have a beefed-up structure, increased weights, more powerful engines, and a "simple stretch" of 7m, increasing passenger capacity by 20% to a total of 235 (two-class). European charter operator Condor is tipped as the leading candidate to be launch customer. The long-range 757-200X would incorporate the existing -200's fuselage with the structure, increased weights and engines of the -300X, combined with extra fuel tanks in the cargo hold, to enable range to be increased by 1,110km to 8,500km.

Boeing has hinted that an announcement to go ahead with the stretched 757-300X may be made at Farnborough, depending on the progress of talks with customers. The prospects for the long range 757-200X appear to have receded however.

A similar stretched 767 derivative, the -400X, would be around 7m longer than the -300, offering a 15-20% increase in seating, 25% more lower-hold cargo volume and up to 10% lower seat-mile costs. The aircraft would have maximum range of around 9,600km. The timetable for this model is uncertain, but Boeing says that the project itself is still "very much alive".

With the first stretched 370-seat 777-300 due to be flown in October 1997, Boeing is now finalising the next development stage of its widebodied twinjet family. It has perceived the need for a very-long-range (ie, more than 14,800km) version, and is studying either a short-fuselage version, the -100X, or a -200 sized derivative, the -200X.

With an overall length of 57m, the 777-100X, would be some 6m (12 frames) shorter than the standard -200, reducing typical three-class seating to 250. Flying surfaces will be identical to the existing models. The -100X will have a maximum take-off weight of 300,000kg, for which 414kN engines are sufficient. Range with 250 passengers is expected to be over 15,550km. An alternative -100X with a six-frame reduction has also been proposed which would carry 271 passengers over 14,000km.

To achieve the best seat-kilometre perfor-

mance, the larger -200X would have to be offered at a gross weight of 313,000kg (in addition to an optional 300,000kg). This requires more powerful 436kN engines which are being developed for the -300 in time for a planned May 1998 entry-into-service date. Boeing sources indicate that the -100X is now favourite, as developing this model will avoid the potential pitfalls of depending too much on the timescale for the higher-thrust engines.

Boeing needs to decide quickly which variant it is to develop if it is to meet its May 1999 entry-into-service plan. To be on schedule, it must agree on a firm configuration by around March 1997 to allow it to begin a 26-month build and certification effort. The short-fuselage version is favoured both by Boeing and the largest 777 customer, Singapore Airlines (SIA).

MD-11 PROPOSAL

Earlier this year details emerged of McDonnell Douglas' (MDC's) latest MD-11 growth proposal, which is dubbed "MD-XX". Two versions of this re-winged, stretched MD-11 derivative are planned. The larger MD-XX, conceived as a rival to the Boeing 747-200/300, will carry 375 passengers over a range of 13,300km. A smaller, longer-range MD-11-sized variant dubbed MD-XXLR would be in competition with the 777 and A340, offering a range with 305 passengers of over 15,700km.

The larger wing, which will not have winglets, is an all-new design featuring increased span (to 61m) and area, and reduced sweep. The size of the fin and horizontal stabiliser will also be increased. Engines rated at 289kN will power the aircraft.

MDC had expected to make an MD-XX launch decision before the end of this year, but this has now been delayed to early 1997. First deliveries are envisaged in 2000. At Farnborough, MDC will give briefings to potential customers, including American Airlines, Delta Air Lines and Swissair, which are believed to be leading interest in the programme.

With the 106-seat MD-95 twinjet programme now progressing towards its first flight in 1998, MDC is evaluating new versions to extend the family which could be developed in parallel with the MD-XX. A stretched 130-seat version, the -50, and smaller 80-seat derivative have been proposed. MDC president Harry Stonecipher says that "...if the MD-XX turns out to be a no-go, then we have two other aircraft that we will look at". No further details of these new models have been disclosed. □



The Airbus A340-600 will have a larger wing and a new higher-thrust powerplant