Boeing Sonic Cruiser ousts 747X

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Boeing has shelved plans to develop the 747X and Longer Range 767-400ER in favour of a high-speed, subsonic transport which could enter service as early as 2006 and is designed to fly at speeds up to Mach 0.98.

Airlines, however, have responded with a mixed reaction. While some raise operational, economic and technical concerns, others see an immediate need for the aircraft, dubbed the "Sonic Cruiser" by Boeing Commercial Airplanes president and chief executive Alan Mulally.

Early studies are focused on a twin-aisle variant seating 225, though the airlines are pressing Boeing to look at a larger version seating 250-300 passengers. Smaller variants, possibly single-aisle designs, are also being considered for versions seating less than 200.

Sized around the current 767-300 span for gate suitability, the first study version is expected to be slightly under 60m (200ft) long with a maximum take-off weight around 204,300kg (450,000lb).

The twin-engined aircraft is being designed around 777-200/300 powerplants to shorten the design cycle, though the unusual semi-recessed mountings will require s-shaped inlet ducts.

The aircraft is expected to have a circular, constant section fuselage sized initially between the 5.03m width of the 767 and the 777's 6.2m. Like the 777 it will have fly-by-wire controls and a 777-style flightdeck, prompting some consideration of crew qualification with the big twin. This, along with reduced flight crew costs because of shorter flight times, forms one of the low-operating cost goals established for the new design under the 20XX project which spawned the sonic cruiser.

Boeing adds that the design will have "at least partial" relaxed stability, and will incorporate a prominent set of foreplanes on the forward fuselage.

The Sonic Cruiser is equipped with a double-delta, or "cranked arrow", wing combining a high-speed inboard section and a higher aspect ratio outboard section reminiscent of conventional Boeing wings. The outboard section has leading and trailing edge flaps for low-speed, and features the raked tip used on the 777 and 767-400ER. The aircraft's twin tails, slightly canted inwards, are mounted on the inboard of the engine nacelle, which project from mounts within the wing.

The configuration is designed to cruise at Mach 0.95 to 0.98, at altitudes between 40,000ft (12,200m) and 50,000ft. This would reduce flight times by more than 1h for every 5,000km flown, cutting transatlantic trip times by more than 2h and transpacific flights by more than three.

The airline working group providing input to the design is believed to include American Airlines, All Nippon Airways, British Airways, Cathay Pacific, Japan Air Lines, United Airlines and Singapore Airlines (SIA).

One prominent Asian member of the group, however, says that the design is not necessarily a response to airline requirements. Instead, the airline believes Boeing was driven to develop a new aircraft in response to small market forecasts for the 747X -70 to 80 aircraft over nine years - and high programme costs. And it suggests the final nail in the 747X coffin is an expected A380 order from Lufthansa. The German flag-carrier is reported to have signed a letter of intent with Airbus for 10 firm plus 15 options.

The reduced flight times on Asian-Europe routes could cause scheduling problems, the airline adds. Another airline source says, however, that the aircraft would provide operational advantages on US West Coast-to-Europe routes.

Emirates, meanwhile, has raised fuel consumption, economic and operational issues. Group managing director Maurice Flanagan says that the Sonic Cruiser would not be suitable for Emirates on the Dubai-London route, for example, due to slot constraints at Heathrow, where the greater capacity A380 makes more sense - an issue which would affect a number of carriers at many slot-constrained airports.

Although Boeing's "Sonic Cruiser" concept underlines its belief in the fragmentation phenomenon, the company maintains its "slow down" on the 747X does not mean it is completely surrendering the large aircraft market to Airbus and the A380 family. "Our current 747 and planned developments are great competition for the A380," says Mike Bair, vice president business strategy and marketing for Boeing Commercial Airplanes. "However, if you ask me will we have anything to compete against it [the planned A380 growth variant] in the 600-seater market, the answer is no."

Boeing's revised growth plan for the 747 encompasses a potential further gross weight step beyond the 413,140kg planned for the Longer Range 747-400 already under development. "We're looking at doing something with the engines to reduce fuel burn and noise, as well as aerodynamic improvements, including the trailing edge wedge and different wingtip treatments - such as the raked tip," adds Bair. The revised plan, believed to be provisionally dubbed the 747-500X, combines cabin interior, flightdeck, systems and aerodynamic upgrades earmarked for the 747X.

Boeing is flying its "Sonic Cruiser" idea after shelving its 747X plans.

Air Canada and SIA have reacted favourably to the aircraft as long as Boeing can deliver on the economics. Air Canada president and chief executive Robert Milton says: "If I was Airbus I'd be very worried", while SIA chief executive Dr Cheong Choong Kong believes there is room for the A380 and the Sonic Cruiser in SIA's fleet.

Mulally says the Sonic Cruiser is designed as a long range "complement" to the 767, not as a replacement. The re-engined 767-400ER has therefore been effectively killed by the decision, as has the stretched 747X family. Boeing says it is still "protecting the ability to do a larger 747" but says the emphasis will shift to improvements to the current aircraft.

Airbus says the 747X cancellation "does not come as a surprise", adding its 62 A380 orders support market calls for an all-new aircraft. Airbus sources say the higher speed of the Sonic Cruiser would produce only a small advantage in flight times on medium-haul routes for a disproportionate increase in weight and fuel costs.