

What they said

Frank Schrontz
Boeing chairman

The company has had discussions with "a number of customers" about the possibility of changing orders from the initial A-version of the 777 to the longer-range B version, but only "a few" changed. He says: "To my knowledge, there are no current discussions going on with any customer in that regard."



Condit: looking ahead 50 years

Phil Condit
Boeing president

After the B-model 777 comes on stream in 1996, the next variant should be a stretched variant. "After that, we expect to build longer-range versions of the basic model and the stretch," he says. "That's the basis of a 30-, 40-, or 50-year programme."

Alan Mulally
Vice-president and general manager of the 777 division. Boeing has not abandoned the folding wingtips originally proposed as a way of fitting the 777 into narrow airport gates, even though no customer has ordered them yet. Mulally says: "I think we'll see folding wingtips some time on the 777. We've wrapped the folding wingtip all up, put it in the box and saved it." He confirms that the weight penalty for the structure and system would be some 1,500kg.

Pratt & Whitney signs Perm MOU

Pratt & Whitney has moved a step closer to completion of a joint venture with Russia's Perm Aviadvigatel engine-design bureau to develop a new version of the PS-90 turbofan, which already the Ilyushin Il-96 and Tupolev Tu-204.

After months of negotiations, the US company signed a letter of intent on 7 April with Perm and the Permskiye Motory production plant, which is ex-

pected to lead to separate joint-venture agreements to develop the powerplant for aerospace and industrial applications.

The US engine maker will invest \$106 million in developing the new PS-90P, which is due for certification in 1997.

The second joint venture will see P&W invest a further \$44 million into the development of an industrial version of the engine. □

HEADLINES

Boeing to make May decision on 777 flight

BY GUY NORRIS
IN SEATTLE

Boeing will decide in the middle of next month if the first flight of its new 777 twin-jet will proceed on schedule on 1 June.

The company has reached the critical phase in the testing of key systems and any last-minute software glitches could delay the flight.

Boeing 777 chief project engineer, Mike Bair, speaking just before the aircraft's roll-out on 9 April, said that intense effort is being concentrated on three major areas of the programme in the run-up to the first flight: flight-control-system (FCS) software, engine integration and aircraft information-management-system (AIMS) software.

"On the engine, we have the usual teething problems. As far as the flight-control system is concerned, we have no major concerns, but we never say we're done testing them," says Bair. "With AIMS, we're checking designs and getting through the testing and burn-down of problems.

"In general, we'll be testing and re-testing until we are right at the end of the runway, but we're certainly not running around in a panic," he adds.

FLIGHT-CONTROL SYSTEM
Boeing 777 flight-controls chief engineer, Jim McWha, says: "We have to make a judgement call two weeks before the

flight controls chief engineer.

ENGINES

A late change in the configuration of the engines for the first few test aircraft is forcing Pratt & Whitney to compress its delivery schedule. The company had planned to supply baseline engines for the first prototypes and deliver entry-into-service (EIS)-standard powerplants later in the project.

Part of the revised EIS configuration includes a stiffened low-pressure-turbine (LPT) case developed in response to the support failure which occurred during its fan blade-off testing in February (*Flight International*, 2-8 March).

The stiffer case will absorb more of the torque energy which passed down the engine during the rapid spool-down following the test.

During the original failure, the LPT case "bent" and caused the turbine itself to "...ground to a halt" against the side. The resulting strain broke the test-stand supports. P&W says that the US Federal Aviation Administration "...has agreed to accept that and we're running some rig tests to demonstrate it can take all that torque. We're still expecting certification around the 29 April."

The tight schedule means that P&W is assembling the complete engine with Boeing's engine build-up accessories on the US East Coast, rather than at Boeing's Kent site in Washington. As the fully assembled engine is too large to be transported by 747, P&W is to deliver the first two flight-test engines to Seattle aboard a



777 rolls towards first flight decision

flight. We have to look at all the tests in the laboratories that need to be completed before first flight. We're looking at between 500 and 600 hours of critical tests in the 'Iron Bird' before mid-May, supplemented by testing in the systems-integration laboratory and various stand-alone labs."

McWha stresses that "...we don't anticipate any safety items in flight. We have got to be confident of that". Most of the tests will be concentrated on the three GEC-Marconi Avionics-built primary flight computers (PFCs) forming the core of the FCS. "Now that the other systems are working well, it allows us to focus on the PFC and elements of the FCS."

Tests are being performed on the internal working of the computers to evaluate their safety, general performance and maintainability. "We're checking redundancy management and seeing how the PFC manages signals coming into it. Internally, we're stressing the PFC to see how it handles various situations," says the