



other structural changes to allow considerably increased permitted landing and zero fuel weights. Though the company has not announced a specific type number, Boeing are known to be studying low seat-mile-cost developments of the 707. These studies almost certainly involve wing flap blowing, developed turbofan engines, and seating for well over 200 passengers.

The 720 series developed from the original -120, feature wing modifications to give higher cruising speeds at lower altitudes. Powered by the P & W JT3C-7 of 12,000lb thrust, the 720 first flew in November 1959. The 720B with an almost identical airframe is powered by P & W JT3D-3 turbofans of 18,000lb thrust which make it the fastest and best airfield performer of all the 707-720 family.

727 First announced in September 1960, the 727 is the three-engined member of the Boeing family designed for short-to-medium stages. Although employing similar fuselage cross-section dimensions and having many systems in common with the 707/720 series, the 727 is a new design. A full description of the design and development history appeared in *Flight International* of May 9, 1963. The decision to go ahead was taken in December

1960 with the signing of contracts by Eastern Air Lines and United Air Lines for 40 aircraft each. The first 727 flew on February 9, 1963, and delivery of the first (uncertificated) 727, to United, was made on October 29, 1963. Boeing expects to have delivered more than 95 727s by the end of this year. A modest but significant development this year was the announcement of a cargo version known as the 727C. With a side door of similar size to that fitted on the -320C, 727Cs can take up to seven standard freight pallets loaded to a total of over 37,000lb.

733 For many years the type number 733 has been allocated to Boeing supersonic airliner designs. In mid-1963 Boeing, in competition with Lockheed and North American, began an urgent distillation of its SST research experience for a submission to the FAA in response to a request for design proposals. Pan American's June 1963 order for the Anglo/French Concorde had spurred President Kennedy into demanding an urgent investigation by American industry in order to produce a superior design. The results of this work were submitted to the FAA investigating team on January 15 last, but by May 1 when the findings were to be announced it was generally known that all three designs were short of

range, and had operating economics inferior to those of present long-haul aircraft. Also the FAA's sonic boom tests at Oklahoma City had indicated bigger problems in this area than previously anticipated, and the leaders of industry had made it clear that the financial rate of return on manufacture would not attract private investment and hence the Government would have to provide at least 90 per cent of the development funding rather than just the 75 per cent offered.

The decision was taken early in June to award further development contracts to Boeing and Lockheed and to Pratt & Whitney and General Electric for work on competing engine proposals. The results of this second phase were submitted to the FAA on November 1 for investigation. To overcome the criticism of the earlier designs, both aircraft have been increased in size and now have payload-stage length capabilities of about 30,000lb over 4,000 statute miles, and operating costs claimed to be comparable with subsonic jets over the longer stages.

The latest Boeing 733 proposal has a variable sweep wing and is of similar overall configuration to that submitted in January but with a capacity for up to 250 passengers on transatlantic sectors. Boeing is reported to have said the revised 733 would cost \$25m each.