

The Cessna that (almost) never was

It never went into production but Cessna's only four-engined aircraft had some revolutionary touches, as Mike Jerram reports



Main photo and left: the sole prototype Cessna 620 in flight. Note long nose-mounted data-gathering boom, under-nacelle augmentor tube exhausts and 310-style 'tuna' tiptanks. (Cessna)



Above: Model 620 prototype on the ramp at McConnell Air Force Base, Wichita. (Author's Collection/Howard Levy)



Here's a sure-fire bet to win next time you're in the flying club bar. Did Cessna ever build a four-engined aircraft? Chances are most people will answer 'No' because the company is best known for its ubiquitous singles, piston and turboprop twins, and the Citation range of business jets.

But nearly 60 years ago the drawing boards at Cessna's Wichita plant were occupied not just with the company's first post-WW2 twin — the Model 310 — but a new four-engined aeroplane. It was provisionally designated Model 620 — "twice as much airplane as the 310".

Cessna's plan to leap-frog competitors Beech and Piper with a bigger, more powerful and more capable aircraft than any current or projected design was driven by a perceived need among U.S. corporations — then mostly operating converted wartime transports and bombers — for an aircraft that would match airliners for speed, comfort and safety. Cessna quizzed corporate operators and pilots to define the basic requirements: four engines for redundancy and safe handling in the event of failure, two-crew cockpit, a 10-seat 'stand-up' pressurised cabin, and an auxiliary power unit to provide on-ground air-conditioning and make the aircraft independent of ground power sources. Target selling price was \$250,000.

Cessna's small design team studied a number of high- and low-wing configurations, opting for the latter, which gave better access for fuelling and engine maintenance, easier landing gear installation and greater

protection for the cabin in the event of a wheels-up landing. The round fuselage cross-section was largely dictated by the stand-up cabin requirement and the demands of pressurisation.

Engine choice posed a problem, because there were no readily available powerplants in the desired 350-400 hp range. For their initial studies Cessna's engineers opted for the then in-development 265 hp Continental Motors GSO-470-B, a supercharged, geared flat-six that had been designed to power a helicopter. As then projected the Model 620 would have had a maximum speed of 252 mph at 12,000 feet, and cruised at 230 mph for 1,250 miles with 45 minutes reserves.

Cessna President Dwane Wallace — nephew of company founder Clyde Cessna — persuaded engineer Ralph Harmon, then with Wichita neighbour and rival Beech Aircraft to join Cessna and recruit a 100-strong development team for the 620. The final configuration they settled upon differed from early studies in that its fuselage cross-section was now oval, providing six feet of cabin height and accommodation for up to 10/11 passengers, or more typically six/eight with a foldaway work table, and a 50 cubic-foot/500 lb baggage compartment, garment closet and lavatory/washroom at the rear. Flight deck and cabin were pressurised to maintain an 8,000-foot environment at a typical cruising altitude of 18,000 feet. The cabin was intended to be quickly convertible from passenger to freight configuration by means of removable bulkheads and cargo tie-down points. The long tricycle landing gear dictated by the need to provide adequate propeller clearance for the outboard engines on narrow or obstructed taxiways posed no problem with cabin access: the 620 was to have an integral airstair door, while an AiResearch APU provided ground power to make it independent of airport ground facilities.

The Model 620's

wing used the same NACA 2400-series airfoil section as Cessna's single-engine models, and was similar in planform to that of the 310, but with single-slotted flaps in place of the 310's split flaps. It sported a pair of 'tuna' tiptanks like the 310's, but unlike the twin, which carried all its fuel in those tanks, the 620 also had bladder-type cells between its forward and rear wing spars and outboard of the inner pair of engines for cabin safety in the event of an accident, bringing total fuel capacity to 535 US gallons.

The engines were now 350 hp Continental GSO-526-As driving Hartzell three-bladed constant-speed full-feathering propellers via reduction gearing. The engines were housed in low-profile nacelles with 'clamshell' upper cowlings for ease of access for maintenance and were equipped with an automatic fire detection/suppression system that was to prove something of an Achilles' Heel in flight testing. Twin augmentor tube exhausts mounted below each nacelle enhanced engine cooling and reduced cabin noise. Reversing propellers were to be offered as an optional extra.

On the flight deck the 620 was to have airline-standard dual flight instrumentation with up-to-the-minute nav aids including ADF, VOR/ILS/DME and — then still a comparative rarity even on airliners — 'cloud warning' or weather radar. Optional equipment was to include a Collins autopilot, pneumatic de-icer boots for the wing and tail unit leading-edges, fluid anti-icing for propellers and windscreen, anti-skid brakes, powered nosewheel steering and an oxygen system.

The prototype Model 620, N620E, was built in Cessna's Pawnee Division's experimental shop. In the late afternoon of 11 August 1956 test pilots Dale Westfall and Bill Stinson taxied the lime/dark green and white aircraft over to the adjoining McConnell Air Force Base and lifted off on the Model 620's 65-minute maiden flight, with design team leader Ralph Harmon following as an observer in a 310.

According to

contemporary press reports Westfall and Harmon were "all smiles" when they stepped down from the 620, although there had been a propeller overspeed problem, as there was a week later on the second flight, which was quickly aborted because of a fire warning and fumes in the cockpit. False fire warnings and engine problems plagued the 620's early flight test programme.

Cessna's marketing department meanwhile was mounting a huge promotional programme that included a road-transportable full-scale cabin mockup, now a commonplace marketing tool for business aircraft manufacturers but then a novelty. Give-away trinkets emblazoned with the 'Six-Twenty' logo accompanied the prototype's public debut at the National Business Aircraft Association Convention in Miami. Cessna commissioned a film entitled *Eye to the Sky* both to laud the aircraft to potential customers and to recruit staff for anticipated large-scale production at Wichita, which it was thought might peak at 100 aircraft per year. Refundable deposits of \$10,000 were solicited, with the expectation of first deliveries in 1958.

It was never to happen. Although — engine teething problems aside — the 620 handled well during flight testing and was unanimously praised by all who flew it, the cost of development had pushed its price to

Left: the Model 620 on a taxiway at Cessna's Wichita factory in 1956 with Cessna 170s, 182s, 310 twins and U.S. Army L-19 Bird Dogs in the background. (Cessna)

\$375,000, without avionics or options. By the time the 620 would have reached the market, US airlines were re-equipping with jets, and surplus piston-engined airliners such as the Convair 240/340 and Martin 4-0-4 which were ripe for conversion as executive transports and had larger cabins than the Cessna were coming onto the used market for little more than half its price. New business turboprops and jets such as the Grumman Gulfstream, North American Sabreliner and Lockheed JetStar were on the horizon. At best, the 620 would have had only a limited sales life, and could never have become profitable.

Faced with mounting criticism from stockholders, on 14 October 1957 Cessna's management summarily cancelled the Model 620, which was then estimated to have cost some \$7 million. The prototype had logged 330 hours in 240 flights and was poised to begin the final certification process. It was



Above: Model 620's main landing gear retracted inwards, freeing space outboard of the inner pair of engines for fuel tanks. GSO-526-A engine's exhaust augmentor tubes are evident in this view. (Author's Collection/Howard Levy)



Left: rear view showing wide-track main landing gear and AiResearch APU outlet



Above: low profile 'clamshell' engine nacelle cowlings provided easy access to the four 350 hp Continental GSO-526-A flat-sixes for maintenance. Centre left: road transportable cabin mockup made its debut at the 1956 National Business Aircraft Association Convention in Miami.

Below: Model 620 cabin interior. Note 'Six Twenty' logos and Cessna trademark stylised bird on seat covers, and mural on rear bulkhead leading to washroom and baggage compartment. (Author's Collection/Howard Levy)

Right: 1956 Continental Motors advertisement for the Cessna 620. (Author's Collection)



immediately stripped of its engines, instruments, avionics and other potentially reusable equipment, and the airframe was demolished by a bulldozer. As if to erase all memory of the aircraft, the company also destroyed all engineering documentation and flight test data.

The Model 620 may have been a 'step too far' for Cessna. In particular, the decision to use an unproven engine, and four of them at that, delayed the flight test programme and contributed substantially to its escalating costs. Yet it might equally be seen as a 'step too soon'. Ironically, at the time of its cancellation Cessna engineers were projecting a twin-turboprop version designed around the forthcoming Pratt & Whitney Canada PT6A. Had that aircraft been built, it might have beaten the now-ubiquitous Beech King Air to market. ■