

Between the mock-up of the Fanjet 500 and an artist's rendering of the Citation X (below), Cessna has sold 2,000 Citations, covering eight models—more if you include single-pilot versions.



COUNTING TO X

The Citation's growth curve

BY THOMAS A. HORNE

THE Citation has come a long way in its 20-year history. The airplane that started on a gamble—that prospects would skip a turboprop in favor of the simplicity and ramp appeal of a minimal jet—grew up and carved out a huge market niche. Just recently, the 2,000th Citation was sold, making this series of airplanes the most popular business jets ever.

Like just about every other large family of airplanes, the first Citations paved the way for successors that were stretched, more powerful, longer legged, faster, plusher, and more technologically refined.

The original Citation (official designation, C-500), the one with the speed jokes, was no joke in terms of sales.

Between 1971 and 1977, 349 of these Citations were sold. During its production run, several refinements were made to the original C-500 specs. The original, 10,850-pound maximum takeoff weight was increased to 11,850 pounds in 1976, and beginning with serial number 41, the electrically heated windshields were replaced with a bleed-air anti-ice system. Thrust reversers were offered as an option beginning in 1974, and in 1976, Sperry/Collins avionics replaced the original Bendix/RCA avionics suites. In 1971, you could buy a brand-new Citation for \$695,000 or so; today, C-500s are worth anywhere from \$450,000 to \$745,000, depending on vintage and condition.

Next came the Citation I (also designated C-500), 342 of



CitationJet

which were built from 1977 to 1985. The I's wingspan is 3 feet 1 inch wider than the original, and its engines—Pratt & Whitney Canada JT15D-1As—are more efficient versions of the JT15Ds used on the previous model, though they carried the same 2,200-pounds-thrust rating. One of the benefits of the upgrade was an increase in the airplane's maximum operating altitude (to 41,000 feet, compared to the original's 35,000 feet). Another was a boost in the cabin's pressure differential, from 7.6 to 8.5 psi. Last was a modest increase in maximum cruise speed. Where the original Citation could cruise at 340 KTAS or so, the I can tool along at 352 KTAS. The jokes about the "Slo-tation" and "Nearjet" began to recede.

The -1A engines were made retrofittable to the earlier Citations. (In fact, nearly all 500s now have -1A engines.) Thrust reversers were made standard equipment on all Citation Is. New, the Is ranged from \$1.1 million to \$2.1 million; now they're going for between \$950,000 to \$1.5 million.

The Federal Aviation Administration granted single-pilot certification for the Citation I in January 1977. This was mostly a paperwork exercise involving some very minor changes in the Citation I's cockpit layout and design. Prior to this time, all Citations were certified to Federal Aviation Regulations Part 25, or Transport category, standards. This meant, among many other things, two pilots. But Citation I/SPs (C-501s), as the single-pilot versions of the I were known, were certified to FAR Part 23 and thus relieved of the two-pilot requirement.

The Citation II (C-550) came along in 1978. Takeoff weight went to 13,300 pounds, wingspan grew again, the cabin was stretched to accommodate eight passenger seats (previous models only had six), and Pratt & Whitney Canada JT15D-4 engines of 2,500 lbst helped boost cruise speeds to 380 KTAS. Thanks to the new engines and a larger fuel capacity (742 gallons, as opposed to the C-500's 544 gallons), the II's IFR range crept to 1,159 nautical miles (the C-500's maximum IFR range is 942 nm).

The II's success has become legendary; it remained in production until 1985 and then was reintroduced in 1987—back, as they say, by popular demand. It's still in production today, 638 sales later. Average equipped, today's Citation II sells for \$3.095 million; back in 1978, they went for about \$1.445 million. Current market values for used IIs run upwards of \$1.3 million.

A single-pilot version of the Citation II, the II/SP (C-551), was also developed. To comply with regulations, the II/SP

was built to a lower, 12,500-pound takeoff weight (the maximum weight allowable for single-pilot operations) and, like the I/SP, certified under FAR Part 23.

In June 1984, the FAA had a change of heart regarding the single-pilot issue. Up to that time, it was the airplane certification that dictated the number of pilots necessary for legal flight. But after reviewing the Citation II's exemplary safety record, the FAA changed the rules. From then on, it would be the pilot who would be granted the exemption to fly a Citation II single-handed, no matter the airplane's takeoff weight.



Citation VI

The exemption required a special endorsement, as well as additional requirements for pilot initial and recurrent training programs. This exemption to the two-pilot rule was later extended to all the Citation II's derivatives—the Citation S/II and the Citation V.

Incidentally, the single-pilot exemption is granted in two-year intervals and conditional upon the results of an ongoing safety study of Citation IIs and Vs flown by one-man crews. To date, 109 pilots have earned the single-pilot waiver. Not one has been involved in an accident or incident. (Although there were two single-pilot fatal accidents before the 1984 exemption plan was implemented.)

The S/II ("Super II," or S550) is the souped-up version of the basic II. These were built from 1984 to 1988; 159 were sold. Wingspan was increased, and computer-aided design/manufacturing was used to give the S/II a supercritical airfoil. Aileron and flap gap seals, along with recon-toured fuselage and nacelle fairings, upped cruise speeds to 403 KTAS, while a larger (862-gallon) fuel capacity

stretched range to 1,378 nm. These represent tremendous improvements, given that the S/II's engines were virtually the same as those of the basic II.

S/II's are distinguished by their swept wing-root cuffs and their use of the TKS "weeping wing" ice protection system for wing and horizontal stabilizer leading edges. Before the S/II, all Citations used pneumatic boots for deicing outboard portions of the wing and electrically heated anti-ice elements on the inboard sections.

The U.S. Navy liked the S/II so much that it bought 15 of them for use in training radar intercept officers. To obtain

higher powered, stretched (by 20 inches) S/II. The V uses 2,900-lb Pratt & Whitney Canada JT15D-5A engines, can cruise at 425 KTAS, and fly as far as 1,960 nm. Even though its maximum takeoff weight is 15,900 pounds, the V is still eligible for single-pilot operation. Like the II, Citation Vs use deice boots on the outboard portions of the wing leading edges but use bleed air to protect the inboard sections from ice accretions. Since production began in 1989, 151 Citation Vs have gone out the door, at average equipped prices ranging from \$3.8 million to \$4.8 million.

The Citations VI and VII (both designated as C-650) have been billed as the successors to the III. Their production lines spooled up late last year. The VI is positioned as a price leader in the effort to lessen the sticker shock (the VI's base price is \$7.095 million) in the step-up from a V. The savings are realized through the use of standard interiors, freon air conditioning (instead of an auxiliary power unit), and an analog, rather than digital, autopilot. The VI has the same engines as the III but cruises a bit faster (at 473 KTAS) and farther (2,345 nm). Four Citation VIs have been sold since last year.

The Citation VII is Cessna's current

Citation II



After being discontinued in 1985, the II was reintroduced in 1987—back, as they say, by popular demand.

more speed, the Navy ordered its S/II's with wingspans 5 feet 8 inches shorter than standard models. In Navy jargon, an S/II was called a T-47A.

New, S/II's sold for between \$2.9 million to \$3.75 million. Today, they're worth between \$2.1 million and \$2.7 million.

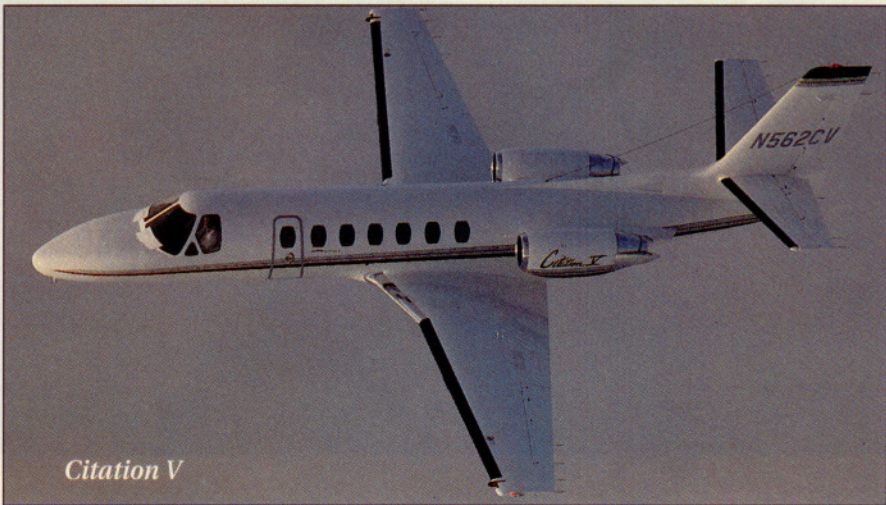
With the Citation III (C-650), there was a clean break with the past. This was Cessna's first mid-sized jet, complete with swept wings, a 467-KTAS cruise speed, and 2,090-nm IFR range. With a maximum takeoff weight of 20,000 pounds, the III was, is, and always will be a two-pilot airplane. The III uses Garrett TFE731-3B engines, which produce 3,650 lbst apiece and give a maximum certified altitude of 51,000 feet and a 9.6-psi cabin. And compared to all its predecessors, that cabin was a big one. Up to 11 seats could be accommodated, and passengers are treated to stand-up comfort. At its tallest point, the III's cabin measured 5 feet 10 inches. The II's cabin is 4 feet 9 inches high.

There were 202 Citation IIIs manufactured from 1982 to 1991. New, they ran from \$4.53 million to \$8 million; used, they fetch \$3.37 million to \$6.64 million.

The Citation IV (C-670) was announced in 1989 as a roomier, longer range variant of the III. But Cessna canceled the program before it ever began. Never mind.

Next came the Citation V (C-560). This is essentially a

Citation V



top of the line. With 4,000 lbst from each of its Garrett TFE731-4Rs, a swanky cabin, and a Mach-0.85 speed limit, the VII is the most capable Citation yet. Its base price is \$8.165 million.

But the Citation's story isn't over yet. In addition to the models currently manufactured—the II, V, VI, and VII—Cessna is now taking deposits on two more Citations: the X (10) and the CitationJet. These two airplanes are at opposite ends of the spectrum.

The CitationJet will be a state-of-the-art version of the first Citations. It will be a six-passenger, 380-KTAS model with maximum range targeted at 1,500 nm, powered by two Williams/Rolls-Royce FJ44 engines with 1,900 lbst. First deliveries are scheduled for sometime in 1993.

The X, due out in 1995, will be a fire-breathing, ocean-hopping, expanded version of the VII. Its 6,000-lb Allison GMA 3007A engines are predicted to give the X a Mach-0.9 cruise speed. At an estimated takeoff weight of 31,000 pounds, this will be the biggest Citation yet. □