PIPER SENECA IV

A new look for Piper's venerable twin

BY THOMAS B. HAINES

The debut of the Seneca IV at AOPA Expo '93 last November in Orlando, Florida, was one more step in Piper Aircraft's methodical march out of bankruptcy. The tortuous process isn't over yet, but that hasn't stopped the company from pressing ahead with reintro-

PHOTOGRAPHY BY MIKE FIZER

ducing and updating its various piston models, nor did it stop the recovering enterprise from delivering 99 airplanes in 1993.

The refinement of the PA–34-220T Seneca in some ways mirrors the changes made last summer to the PA–32 when it became the Saratoga II HP (August 1993 *Pilot*). Like the 'Toga, the Seneca got the new circular engine inlets that reduce drag and improve engine cooling. The two models also share a newly designed leather interior with new window lines and shades and a refashioned avionics panel. The PA–32 received more exterior refinements such as a lower drag exhaust system and some new fairings. The result was about a 7-knot increase in cruise speed.

Those exterior extras did not make it onto the new Seneca, but they may show up in a later version.

Piper engineers admit that the changes to the Seneca are mostly cosmetic. Flight test pilots measured no increase in cruise speed, nor did they expect any. If they had wanted to claim an increase in performance, the Federal Aviation Administration would have required a recertification program similar to the one for the Saratoga that took months.

Instead, Piper was interested in quickly making some welcome enhancements to an airplane that fits a niche like no other currently available. The Seneca always has been a hit with charter operators because of its payload flexibility, six seats, and reasonable operating costs.

The only other new piston twin available is the Beech Baron, but it retails for some $300,000 more than the Seneca's $424,900 base price, which includes an impressive list of standard equipment. Gone, at least at most manufacturers, are the days when "standard equipment" included only a nav/com, transponder, and pitot-static system.

The standard Seneca comes with Bendix/King avionics including two nav/coms, both with glideslope indicators; the KLN 90 GPS; a DME, ADF, and transponder; the KFC 150 two-axis flight control system with flight director; an audio panel and ground clearance switch, among others. On the outside, deicing equipment and approval for flight into known icing are also standard, a real boon to charter operators in the North.

The old and the new park side by side at Aero Acres Airpark in Port St. Lucie, Florida. The Seneca I (background) is owned by Lou Cicalese.

Even that capable equipment does not begin to fill all the space on the new panel. To personalize your airplane, you can shop from a five-page (single-space) options list that runs the gamut from a $1,200 altimeter upgrade to a $48,400 electronic flight instrumentation system. In between is everything from color weather radar to moving maps, air conditioning, and a yaw damper system.

The improvements to the twin come some 13 years after Piper last gave the PA–34 a facelift. The Seneca III debuted in 1981. Items optional on the III, but now standard in the IV, include: heavy-duty brakes and tires; tinted windows; 70-amp instead of 60-amp alternators; and three-blade, full-feathering McCauley propellers with polished spinners and synchrophaser. Two-blade Hartzell props, formerly standard, are now options.

The new round engine inlets reduce cooling area to just 70 square inches,

Shop from a five-page options list to fill all the space on the Seneca IV's already well stocked standard panel.

compared to the old design that needed 158 square inches. The result is more even engine cooling, according to Piper.

N9219X, the Seneca IV pictured on these pages, carries a few of the options, such as the RDS-81 color radar, built-in oxygen system, copilot instruments, and air conditioning. The options add some $40,000 to the base price. N9219X lists for $464,535.

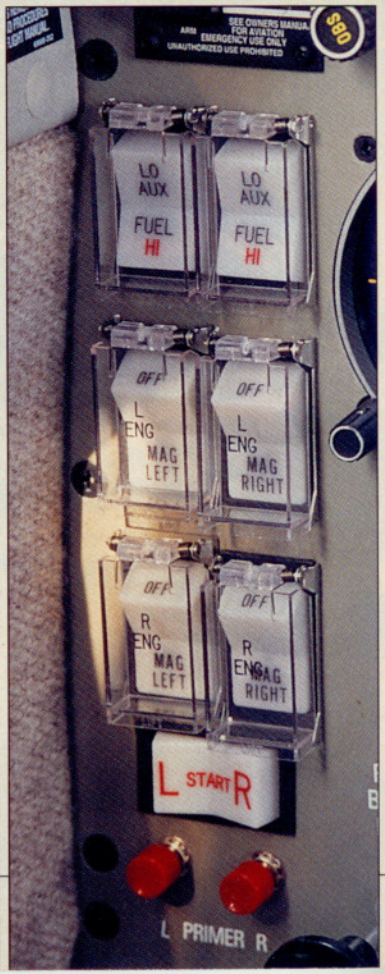
According to Piper, the base price of the new model with its well-stocked standard panel and refined interior is actually some $13,723 less than the price one would have paid for a comparably equipped Seneca III last year. The savings come from Piper's ability to purchase the standard avionics packages and other items at a discount and the manufacturing efficiencies that come with needing to install fewer options—something the automobile manufacturers, especially the Japanese, learned long ago.

What you get for your near-half million dollars is multiengine system

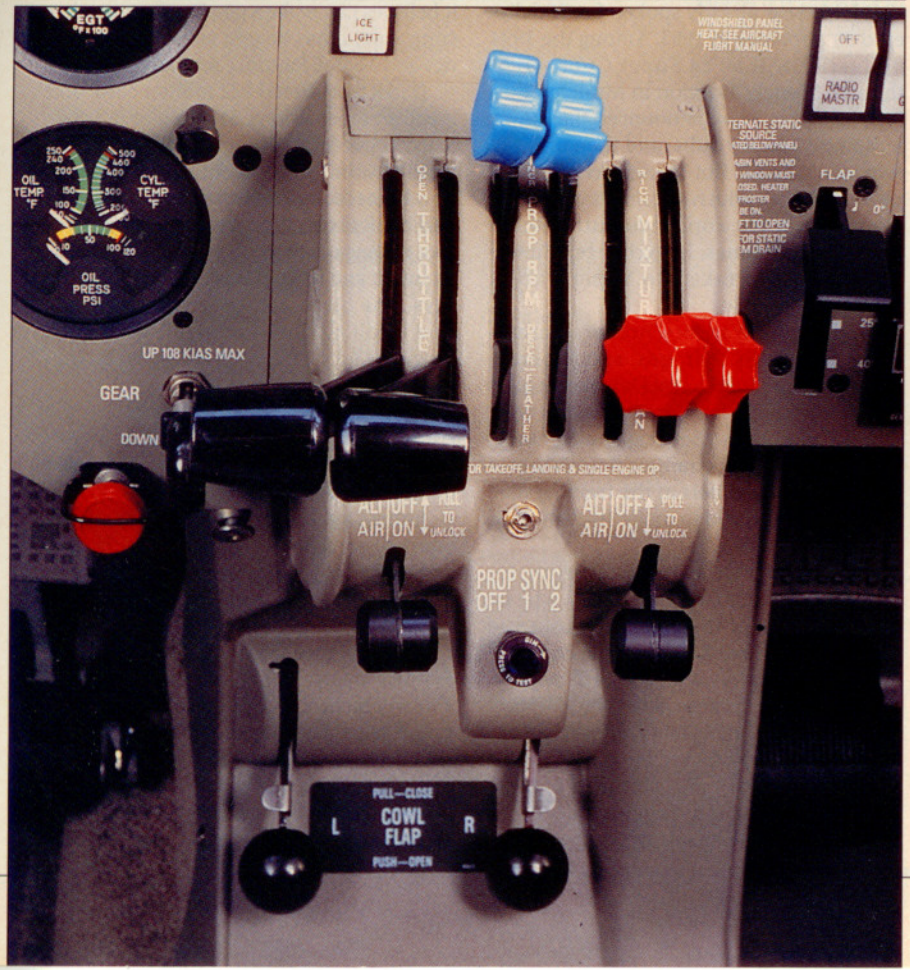
redundancy and, in the case of N9219X, the ability to carry three FAA standard 170-pound persons; 90 pounds of baggage, which you could divide between the aft and nose compartments; and a full 123 gallons of fuel. Full tanks provide an endurance of 4.5 hours at a 65-percent-power fuel burn of 23.3 gallons per hour, which yields 175 knots at 10,000 feet. Put six people on board, and the Seneca will carry only about 53 gallons of fuel, enough for 1.5 hours and a 45-minute reserve. In-between the extremes is a lot of payload, loading, and endurance flexibility. For the package carrier, the Seneca can take 100 pounds of stowage in each of its nose and aft baggage compartments.

The Seneca's load-hauling capability goes back to its early 1960s genesis as the Cherokee Six, from which the Saratoga also derived. Apparently thinking that what was good for Ford might be good for Piper, the company once put wing-mounted engines on a Cherokee Six, making a Piper trimotor. That experimentation eventually spawned the Seneca. Powered by two counterrotating four-cylinder, 200-horsepower Lycoming (L)IO-360 engines, the Seneca debuted in late 1971 as a 1972 model. The original model design suffers from poor lateral stability; it waggles through the air.

Improvements came in the 1975 model year as the Seneca II. Piper replaced the Lycomings with a pair of 200-hp Continental TSIO-360-E six-cylinder turbocharged engines and increased the gross weight to 4,570 pounds. New longer ailerons, a rudder anti-servo tab, and the removal of an aileron-rudder interconnect system improved handling, especially at slow speeds and in crosswinds. The original Seneca's paltry single-engine climb rate of 225 feet per minute was maintained but at the II's higher gross weight. Endurance was increased with the addition of optional auxiliary fuel tanks in the wings, upping the load from 100 gallons to 128 gallons, 123 usable.



Piper left things pretty much alone through the banner years of the late 1970s. By 1981, it was time for a freshening of the design, and thus was born the Seneca III. That model offered greater



loading flexibility with higher maximum takeoff, ramp, and zero fuel weights.

To give the decade-old design a new look inside, Piper in 1981 also replaced the plastic-covered panel with a more modern metal one. The layout was a big improvement over the earlier panels but still left important engine gauges and switches hidden by the pilot's knees. Also, Piper's trademark manual flap extension system gave way to an electric one. A new engine variant allowed 220 hp at 2,800 rpm for takeoff, with a five-minute limitation. Maximum continuous power of 200 hp was accomplished with 2,600 rpm.

The new Seneca IV carries the same powerplants and limitation. Unfortunately, the current variant also uses the same fixed wastegate system on the turbochargers, making for fussy engine operations. The fixed wastegate is adjusted on the ground to provide 40 inches of manifold pressure at full throttle and maximum rpm at 12,000 feet density altitude. At sea level, the 40-inch limit is reached at barely half throttle, which means some careful manipulation is needed to prevent overboosting. On takeoff, for example, the throttle should be advanced until manifold pressure reaches about 35 inches. As the airplane accelerates and

the turbos spool up, the manifold pressure will stabilize at near 40 inches. Bust through the limitation, and annunciators will admonish you to reduce power, usually right after rotation when there's plenty to occupy your attention. Relief valves are supposed to prevent manifold pressure from exceeding 42 inches.

The fixed wastegates allow wide

PIPER UPDATE

Navigating the rocky road out of bankruptcy

While being careful not to spool up production of too many models too quickly, Piper Aircraft is making progress in broadening its product line and modernizing its fleet. Many of the enhancements to the Seneca IV are based on those developed for the Saratoga II HP, which borrowed ideas from the Malibu Mirage. Next in line to get some improvements are the Warrior and the Archer.

The new Warrior III and Archer III will debut this year at Oshkosh, according to Charles M. Suma, company president and chief operating officer. The Warrior III is seen as the primary trainer of the fleet. Warriors carrying the "III" moniker will have a new flat metal panel, as in the Saratoga and Seneca; a 24-volt electrical system; and sturdier interior fabrics meant to withstand the rigors of the training line. The airplanes will be available in an IFR and VFR configuration with virtually no options. Actually, the Warrior III isn't Piper's first light single to have a flat metal panel. The Cadet, a trainer version of the Warrior introduced in 1988, also came with a Spartan flat panel.

The new Archer III, meant for the personal market, gets the panel treatment and the 24 volts, but it also receives the round engine inlets and a redesigned cowling along with a change to the window lines and an extended nose. The nose job will be topped off with a redesigned spinner and possibly a new, more efficient propeller. The optional air conditioning system will be of the freon-free "environmentally friendly" type that is now showing up on automobiles. Eventually, all of the air conditioners Piper installs will be of that design, according to Werner K. Hartlieb, vice president of marketing and sales.

Future plans for the Archer III include an engine upgrade from 180 to 200 hp and the introduction of fuel injection.

In all, Piper plans to deliver 137 airplanes in 1994, and already more than 90 percent of those have been committed by distributors, Suma says. In other words, the company is in the comfortable position of having nearly all the airplanes it can build this year already spoken for. It delivered 99 airplanes in 1993. Among the 1994 deliveries will be 24 Super Cubs, all of them to Muncie Aviation in Muncie, Indiana. Last year, Piper announced that it was building 17 Super Cubs, and then production would cease. But Muncie Aviation has negotiated an exclusive contract with Piper that makes it the worldwide distributor of the yellow airplanes. In exchange, Muncie has said it will take two Super Cubs a month indefinitely.

Besides the Warriors, Archers, Saratogas, Super Cubs, Mirages, and Senecas, Piper also will build a few Dakotas, at least one Arrow, and a few Seminoles this year. The Warrior, Arrow, Seneca, and Seminole form the company's training fleet. Wherever possible, the panels of the training fleet will be standardized to make student transitions up the line easier.

Two new models are in the offing for 1995, according to Suma. They will be replacements for the 235-hp Dakota and the 200-hp Arrow. Referred to as a "new" fuselage design, the airplanes will be powered by 250-hp engines, and they will carry many of the interior and exterior improvements being implemented to the rest of the product line. Piper may continue to build the 200-hp Arrow as a complex trainer. The new airplanes will be mostly for the owner-flown market.

Meanwhile, Piper continues to plod along through bankruptcy proceedings. It seems that hardly a week goes by without an announcement that some other interested party has made a bid for the company. The latest offering is from Dimeling, Schreiber, and Park, a Philadelphia private investment firm that specializes in buying and capitalizing bankrupt companies that it believes can make a go of it. Among other companies it has bought are Mohawk Plastics and McCall Pattern Company.

DS&R has offered $22 million cash, and it will assume another $13 million in liabilities, according to Suma. The liabilities include some Small Business Administration loans, some environmental cleanup, and back taxes. It plans to leave the present management in place and the company intact and in Vero Beach, Florida, Suma says. The investment company also has said it will attempt to provide floor-plan financing for distributors and retail financing for end customers.

Among those also still interested in the company are Pilatus Aircraft and an investment group including Hal Shevers, owner of Sporty's Pilot Shop.

Suma says he expects the bankruptcy court to set a confirmation hearing date and closing in May, giving contenders until early April to make final offers.

Regardless of who ends up owning the company, Suma says he is sure it will successfully emerge from bankruptcy and probably will be ripe for a public offering in four to five years. That income will provide Piper with the research and development funding to produce a number of new products based on the Malibu design and perhaps some completely new airplanes. *—TBH*

swings in manifold pressure and thus require a lot of time be spent fiddling with the mixtures.

The answer to making the engines more fuel efficient and in reducing pilot work load lies in installing an absolute controller and intercooler system, explains a Piper engineer. Those changes will come in a subsequent model, but according to Piper officials, don't look for that until well after the company emerges from bankruptcy, which could be later this year.

The Seneca's control responses can't be described as crisp, but the airplane is stable if a bit heavy on the controls. Ground handling particularly is truck-like.

In flight, though, one quickly masters the Seneca. Engine management aside, it is an easy airplane to fly and even the power manipulation is not a major concern with a little practice.

The counterrotating propellers reduce adverse yaw when one engine goes south, making the Seneca a real friend when things go wrong. As with most light twins, you won't be able to climb up and over tall mountains on one engine, but with a single-engine service ceiling of 12,000 feet, you'll have lots of latitude nonetheless. The 240-fpm single-engine rate of climb at gross weight and sea level is about on par with other airplanes of this class.

Some 4,500 Senecas have been built since 1971, more than three quarters of them the turbo versions. Piper plans to increase that number by 17 in 1994, all of them already committed to distributors. In Piper twins, only the Aztec, with more than 4,770 airplanes built, has outsold the Seneca. On February 2 of this year, Piper celebrated the fortieth anniversary of its multiengine manufacturing. The Apache, also Piper's first all-metal airplane, received its type certificate on February 2, 1954. The company rolled 2,166 of those airplanes out the plant doors. For those keeping score, as of the end of 1993, Piper had delivered 121,988 airplanes since 1937.

For now, the Seneca is the company's sole twin offering, but that will likely change within the year when a few Seminoles will be built for the training market.

The Seneca is also sometimes used as a trainer, but the new airplane, with its jaunty, almost art-deco cowls, sophisticated and comfortable interior, and take-me-anywhere panel, seems to be more of a traveling machine. The turbochargers provide the get-up-and-go to at least top some of the weather in the lower flight levels, and the deicing system makes winter flying a whole lot more practical.

The introduction of the Seneca IV is just one more example of Piper's ability to identify market potential for its designs and then implement a program of systematic improvements to attract new buyers. The scrappy team from Florida refuses to quit, and from it, we can expect many more announcements in the coming months. □

Piper PA–34-220T Seneca IV
Base price: $424,900
Price as tested: $464,535

Specifications

Powerplants	Two Teledyne Continental Motors (L)TSIO-360-KB 220 hp @ 2,800 rpm (five-min limit) 200 hp @ 2,600 rpm (max continuous)
Recommended TBO	1,800 hr
Propellers	McCauley three-blade, 76-in diameter
Length	28 ft 7.4 in
Height	9 ft 10.5 in
Wingspan	38 ft 10.9 in
Wing area	208.7 sq ft
Wing loading	22.8 lb/sq ft
Power loading	10.8 lb/hp
Seats	6
Cabin length	10 ft 5 in
Cabin width	4 ft 1 in
Cabin height	3 ft 6 in
Standard empty weight	3,352 lb
Basic empty weight, as tested	3,434.5 lb
Max ramp weight	4,773 lb
Gross weight	4,750 lb
Standard useful load	1,421 lb
Useful load, as tested	1,338.5 lb
Payload w/full fuel	683 lb
Payload w/full fuel, as tested	600.5 lb
Max takeoff weight	4,750 lb
Max landing weight	4,513 lb
Zero fuel weight	4,470 lb
Fuel capacity, std	128 gal (123 gal usable) 768 lb (738 lb usable)
Oil capacity, ea engine	8 qt
Baggage capacity	Forward 100 lb, 15.3 cu ft Aft 100 lb, 17.3 cu ft

Performance

Takeoff distance, ground roll	920 ft
Takeoff distance over 50-ft obstacle	1,210 ft
Accelerate-stop distance	2,088 ft
Max demonstrated crosswind component	15 kt
Rate of climb, sea level	1,400 fpm
Single-engine ROC, sea level	240 fpm
Max level speed, sea level	196 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption, total)	
@ 75% power, best economy 17,000 ft	193 kt/2.6 hr (29 gph/174 pph)
@ 65% power, best economy 18,000 ft	191 kt/3.1 hr (24 gph/144 pph)
@ 55% power, best economy 22,000 ft	180 kt/3.6 hr (19 gph/114 pph)
Max operating altitude	25,000 ft
Single-engine service ceiling	12,000 ft
Landing distance over 50-ft obstacle	1,978 ft
Landing distance, ground roll	1,218 ft

Limiting and Recommended Airspeeds

V_{MC} (min control w/one engine inoperative)	66 KIAS
V_{SSE} (min intentional one-engine operation)	85 KIAS
V_X (best angle of climb)	76 KIAS
V_Y (best rate of climb)	92 KIAS
V_{XSE} (best single-engine angle of climb)	78 KIAS
V_{YSE} (best single-engine rate of climb)	92 KIAS
V_A (design maneuvering)	140 KIAS
V_{FE} (max flap extended)	115 KIAS
V_{LE} (max gear extended)	130 KIAS
V_{LO} (max gear operating)	
Extend	130 KIAS
Retract	108 KIAS
V_{NO} (max structural cruising)	166 KIAS
V_{NE} (never exceed)	205 KIAS
V_{S1} (stall clean)	67 KIAS
V_{SO} (stall in landing configuration)	64 KIAS

For more information, contact Piper Aircraft Corporation, 2926 Piper Drive, Vero Beach, Florida 32960; telephone 407/567-4361.

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.