

A high-angle, aerial photograph of a Piper Tomahawk aircraft in flight. The plane is white with blue and red stripes along the fuselage and wings. It is flying over a dense, green forest. The aircraft is positioned on the right side of the frame, angled towards the left. The registration number 'N01000' is visible on the side of the fuselage. The cockpit has a large, bubble-like canopy. The wings are long and straight. The background is a vast expanse of green trees, creating a textured, forested backdrop.

Budget Buys Day-tripper

Piper Tomahawk: Not your typical trainer

BY JULIE K. BOATMAN

A lot of pilots met their first Tomahawk during primary training. But it looks more like a time machine than a run-of-the-mill trainer, with its double doors and bubble view. And this is one time machine that almost anyone can afford—for less than the price of a convertible, a pilot can expand precious weekends by spending more time at a destination and less time getting there.

When the original Piper Aircraft Corporation first conceived a new trainer in the mid-1970s, the company polled CFIs to determine what traits this airplane should have. The Tomahawk delivers what these special customers ordered: an airplane that provides honest response to pilot inputs, a comfortable cabin with great visibility, and big-airplane-style handling. Cockpit layout is geared for safety, with the fuel selector front and center on the console.



Flight instructors we spoke to feel strongly that the Tomahawk does what Piper intended. "It's the best primary trainer ever built," says Jim Tafta of Richmond Flight Center in West Kingston, Rhode Island. "The student is well trained, and they can't get away with some of the things they can in other trainers." The feedback is overwhelmingly positive, with one caveat: This airplane, though a trainer, still demands proper training of its pilots from a qualified instructor. Those with the training have flown the Tomahawk for thousands of hours without incident.


Flight characteristics

Pilots need special training because of

the way the airplane was designed to stall and spin. The wing design, the same basic section as the one on the less common Beech Skipper, was a cutting-edge airfoil—the NASA-generated GA (W)-1—in the late 1970s. On the Tomahawk airframe, the wing produces aggressive stall characteristics suitable for teaching primary students about stall recognition and recovery. However, that design led to a higher incidence of stall/spin accidents, perhaps because the airplane cannot simply fly itself out of a spin like other trainers—it wasn't meant to, so that students would learn proper control inputs. This is one airplane where it pays to know the territory.

The Tomahawk controls have a heav-

ier feel, as they were designed to mimic those of a much larger airplane. In addition, the T-tail delivers reduced elevator control response at low airspeeds—and this is actually reflected in the accident reports to a larger degree than stall/spin issues. During the takeoff roll, the elevator becomes effective at around 35 KIAS. If the pilot has been impatient and is holding greater back-pressure in an attempt to raise the nose before this point, the airplane will overrotate. The same effect reverses on landing, "especially when a headwind shears off," according to Adam Harris, director of maintenance at East Coast Aero Club at Hanscom Field in Bedford, Massachusetts, who has owned four Tomahawks



over the years. These are simply attributes of an airplane that doesn't fit the standard mold, Harris points out. "We rent them to people with 10 hours and they always come back."

In fact, if you're looking for an airplane to provide a steppingstone to a larger aircraft, the Tomahawk makes a sound choice. You face an easier transition in the long run because of these big-airplane characteristics.

Cross-country flier

The Tomahawk is roomier than you might think, and taller pilots feel more comfortable in this airplane than in, say, a Cessna 152. Ventilation is also better than average, with automobile-style vents blowing cool air at altitude on summer days. The cabin is wider by several inches than other two-seat airplanes, so you needn't be intimate with your passengers.

The airplane's greatest utility is as a day-tripper. Paul Diette of Mansfield, Massachusetts, bought his 1982 Tomahawk II for trips around New England with his wife—trips that take less than three hours and only require light bags. The airplane has proven perfect for the mission: Places like Martha's Vineyard and Bar Harbor, Maine, are reachable in half the driving time.

Usable fuel is 30 gallons, and during cruise Diette figures he burns between six and seven gallons per hour. He typically flight plans a true airspeed of 105 knots. Endurance is about 3.5 hours with an hour reserve—with full fuel you can carry roughly 325 additional pounds of pilot, passenger, and baggage, based on the empty weight of a

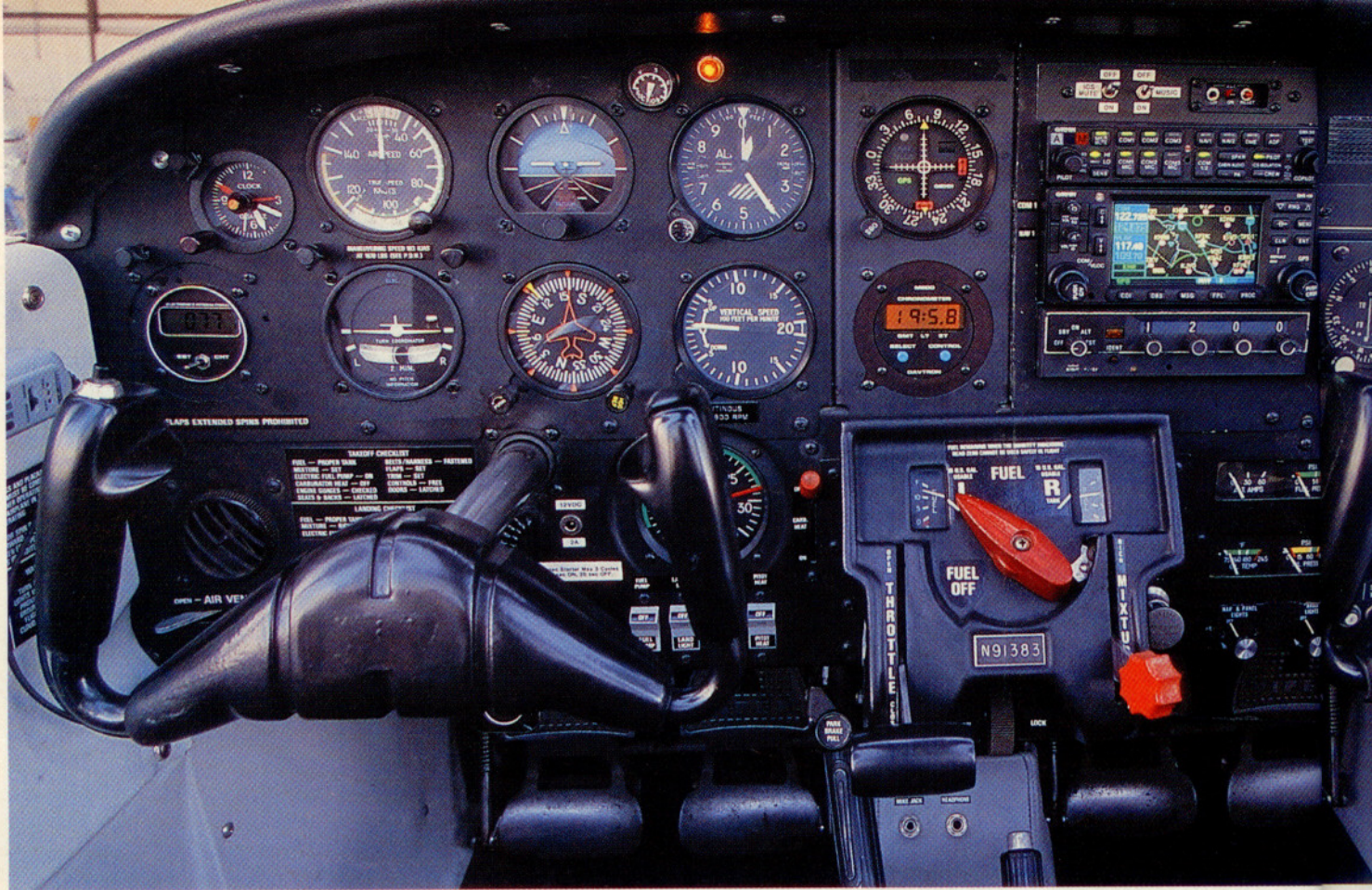
reasonably equipped Tomahawk (around 1,165 pounds). It goes over gross quickly (it is a two-seat aircraft, after all), but because of the size of the cargo area, light-but-bulky items, such as an Adirondack chair that Diette flew home after a successful shopping trip, can be handled.

Model history

Just fewer than 2,500 Tomahawks were produced in model years 1978 to 1980, with the most units produced from 1978 to 1979. Aftermarket kits for the rear wing spar, vertical fin attach plate, and rudder hinge were developed to address several airworthiness directives (ADs) that were issued soon after these models hit the ramp. In 1981 and 1982, the Tomahawk and Tomahawk II were made with many of the ADs taken care of at the factory. These later models are preferable, as the installation of AD kits in the field was accomplished with varying degrees of accuracy. Aircraft with these field ADs may exhibit divergent flight characteristics from the standard Tomahawk because of what are considered vague installation instructions from Piper, according to several A&Ps we spoke to. Of course, as the gods of economics would deviously demand, fewer of the later models were produced as steeply rising interest rates and a soft economy helped send new aircraft sales to the basement in the early 1980s. Annual production runs during 1980 to 1982 were less than 200 aircraft a year—not even one-quarter the yearly production of Tomahawks in 1978 and 1979. It's no surprise that prices steadily increase with model

The Tomahawk's double doors and bubble view give pilot and passenger a wide-screen outlook on the passing scenery, making the aircraft perfect for weekend getaways.





year, from \$16,000 for a 1978 model to \$18,500 for a 1982.

Original Tomahawks rolled off the line with basic VFR instrumentation. The so-called "Special Training Package No. 1" gave the airplane gyros, external and internal lighting, dual brakes, one (then) King nav/com and transponder, an ELT, and a heated pitot tube—for a total price of \$19,730. Strangely enough, the same airplane (with a radio upgrade or two along the course of 20 years in service) costs about the same, not adjusting for inflation, as it did in 1979. The price has rebounded somewhat over the past decade; Harris purchased his first Tomahawk for less than \$10,000 in 1989, while Diette purchased his 1982 model with year-old paint and a fresh engine with a 125-horsepower upgrade for \$22,000 in 1999. More on that in a bit.

That wing

One thing for prospective buy-

ers to keep in mind: The Tomahawk wing has a lifetime fatigue limit of 11,000 hours. Some long-in-the-tooth airframes have nearly that many hours after years on school flight lines. Currently, a set of used wings from an otherwise toasted Tomahawk is the one recourse. There is talk of pursuing a life extension of the wing. Paul Sterling, owner of Sterling Aviation in Kent, Washington, is working with the FAA to modify the wing spar and lower the stress levels of critical components in the wing, hopefully adding 5,000 hours to the wing's life. He expects a kit to be

ready in roughly a year, and he hopes to keep the cost below \$3,000. "The Tomahawk is kind of an orphan," says Sterling. "We call ourselves friends of the Tomahawk—it's a labor of love."

Other mods

Sterling has other STCed mods available, including a nose-gear scissor link to greatly reduce shimmy—a problem in a training airplane with no shimmy damper. Air Mods Northwest offers the 125-hp upgrade to the Lycoming O-235 engine mentioned earlier. This mod increases the compression ratio and

induces a timing change such that the engine can run at 2,800 rpm continuously rather than the 2,600 rpm limit on the regular O-235. The mod also allows the pilot to adjust the pitch on the prop for cruise or climb operations. If you plan on flying the airplane from airports above 4,000





The Tomahawk is often a steppingstone to a larger aircraft—its controls have a heavier feel, mimicking a more substantial aircraft. The T-tail reduces elevator control response at low airspeeds.



feet msl, this mod might be on your short list. Madras wing tips add stability and decrease stall speed, but only by a couple of knots—you either like the looks or not, so really it's a matter of preference. The owner of the STC, Madras Air Service, left the business recently, so it's uncertain whether these tips will continue to be available. A McCauley propeller can also be swapped out for the stock Sensenich to reduce vibration, according to Diette.

Clubs

When researching a used aircraft,

i Links to additional information about Piper Tomahawks may be found on AOPA Online (www.aopa.org/pilot/links.shtml).

with any aircraft purchase, experience is key. "Make sure the shop [which performs the prepurchase inspection] is very familiar with Tomahawks," warns Tafta. With aftermarket AD kits

type clubs host a wealth of information. Two good sources are the Piper Owner Society and www.pipertomahawk.com, a Web site maintained by Bob Floodeen. As

and high airframe times, discrepancies can easily crop up. But even the nicest Tomahawks out there remain true bargains—and are dearly loved by their owners. Just ask Diette about N91383: "It is truly amazing that you can explore America using your own airplane and your own flying skills."

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SPECSHEET

Piper Tomahawk PA-38-112

Average used price: \$16,000 to \$18,500

Specifications

Powerplant	Lycoming O-235
	112 hp @ 2,600 rpm
Recommended TBO	2,400 hr
Propeller	Sensenich, fixed pitch, 72-in dia
Length	22 ft
Height	9 ft 1 in
Wingspan	34 ft
Wing area	124.7 sq ft
Wing loading	13.39 lb/sq ft
Power loading	14.9 lb/hp
Seats	2
Empty weight	1,088 lb
Useful load	582 lb
Payload w/full fuel	402 lb
Maximum takeoff weight	1,670 lb
Maximum landing weight	1,670 lb
Fuel capacity, std	32 gal (30 gal usable)
	192 lb (180 lb usable)
Oil capacity	6 qt
Baggage capacity	100 lb, 20 cu ft

Performance

Takeoff distance, ground roll	820 ft
Takeoff distance over 50-ft obstacle	1,440 ft
Maximum demonstrated crosswind component	15 kt
Rate of climb, sea level	720 fpm
Cruise speed/endurance w/45-min rsv, std fuel @ 75% power and 5,000 ft (fuel consumption)	100 to 104 kt/4.4 hr (35 pph/5.8 gph)
Landing distance over 50-ft obstacle	1,462 ft
Landing distance, ground roll	635 ft

Limiting and Recommended Airspeeds

V _X (best angle of climb)	61 KIAS
V _Y (best rate of climb)	70 KIAS
V _A (design maneuvering)	103 KIAS
V _{FE} (max flap extended)	89 KIAS
V _{NO} (max structural cruising)	110 KIAS
V _{NE} (never exceed)	138 KIAS
V _R (rotation)	53 KIAS
V _{S1} (stall, clean)	48 KIAS
V _{SO} (stall, in landing configuration)	46 KIAS

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.