TRI AGAIN

An airplane in the true spirit of the Trimotor —still big, still slow, still working for a living.

BY MARC E. COOK

Michael Lauver answers the same question time and again. Interested onlookers stare at the huge white airplane, casting a gaze over its corrugated metal skin and oil-oozing radials. One might ask: "Hey, isn't this thing a . . . hold on, I got it: a Ford Trimotor."

"Nope. Three engines, yes. But not a Trimotor, a Bushmaster," Lauver replies.

"Um, are you sure?"

Lauver, ever the gentleman, resists rolling his eyes and saying what's probably on his mind ("I ought to know what I fly,

PHOTOGRAPHY BY MIKE FIZER

don't you think?"). Instead, he smiles and says, "Really. It's a Bushmaster."

Now if the inquisitive soul hasn't begun to think he's been dropped into a *Twilight Zone* episode where familiar items are called something else (pickup trucks are called dog banjos, that sort of thing), he's likely to mutter, "Hmm. Never heard of the airplane. Looks like a Ford Trimotor to me."

He would not be alone in his confusion. Indeed, the Bushmaster 2000, as the outsized three-engine transport properly is called, bears such a resemblance to the Ford that if they aren't twins, then they certainly shared freely from the same gene pool. But this airplane, the second and last Bushmaster built, is a relative pup, having been completed in 1985. (Its mate rolled from

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Bushmaster Aircraft Corporation's Long Beach, California, factory in 1966 and now resides in the Owl's Head Transportation Museum, in Owl's Head, Maine. A third aircraft was begun but never finished.)

This Bushmaster, N750RW, might be a youngster, but it's old enough to work. Lauver and partner Patrick O'Hare operate it and a pair of Beech 18s under the banner of California Wings Air Tours (3750 John J. Montgomery Drive, Suite A, San Diego, California 92123; telephone 619/576-1922). The 12-seat Bushmaster flies as many as six one-hour tours on weekends and perhaps a handful during the week. Seats are $49 apiece. From the departure point of Montgomery Field in San Diego, the tour makes the short journey to the Pacific Ocean, then heads north to Del Mar, and then takes a turn south back along the shoreline for a tour around downtown San Diego, Coronado Island, and the naval shipyard.

Although the Bushmaster is a superlative tour vehicle, Lauver admits that his company "wasn't really looking for a trimotor" when it bought the airplane at auction. Well in advance of the Santa Monica (California) Museum of Flying Auction last spring, Lauver and O'Hare had decided to attend largely as spectators. California Wings' two Beech 18s had been doing good business as sightseeing aircraft, and the desire for a third airplane wasn't particularly pressing. Even so, when the gavel fell, the trimotor was their baby. For $250,000, the only working Bushmaster had found a new home.

That the Bushmaster should still be working today is a testament to the goodness of the original Ford. Brainchild of William B. Stout, the Ford 4-AT and 5-AT Trimotors evolved (more or less) from Stout's 3-AT Air Pullman, an ungainly, underpowered design that would ultimately give its rear fuselage and tail section to the later airplane. The first flights of the 3-AT showed the airplane to be underwhelming. Henry Ford, who had been convinced by Stout's salesmanship to first contribute handsomely to the Stout Metal Airplane Company, then to purchase it outright, lost interest in the 3-AT and Stout's engineering ideas. The sole 3-AT would meet its end in 1926 in a mysterious hangar fire.

Ford understood then that Stout's public relations skills outweighed his abilities to design airplanes, and he put Stout on the road, ostensibly to promote aviation. In the interim, Ford, still sold on the merits of a three-engine transport, ordered his engineers to build another trimotor, this one patterned after the contemporary Fokker. The Ford, however, would continue the use of corrugated aluminum construction that had been a Stout trademark, rather than the tube and fabric of the Fokker.

The prototype 4-AT first flew in June 1926, and within six months, the Trimotor was on the assembly line. Shortly thereafter, the company began cargo and airline service from its headquarters in Dearborn, Michigan. Pilot reports and public acceptance soon proved that the revitalized Trimotor was as inherently right as its precursor was flawed.

Ford continued development of the airplane, culminating in the 5-AT. This airplane, which gained 4 feet in wingspan and 2 feet in fuselage length over the 4-AT, also swapped the earlier air-

Bushmaster's tall, narrow cabin (far left) seats 12 in more comfort than you'll find in most airliners. It is roomier than the Ford Trimotor, from which it appears to be cloned. Michael Lauver and Patrick O'Hare (left), the current keepers of the Bushmaster flame, are enthusiastic about their rare bird. The duties of piloting a nearly one-of-a-kind piece of history keep them smiling.


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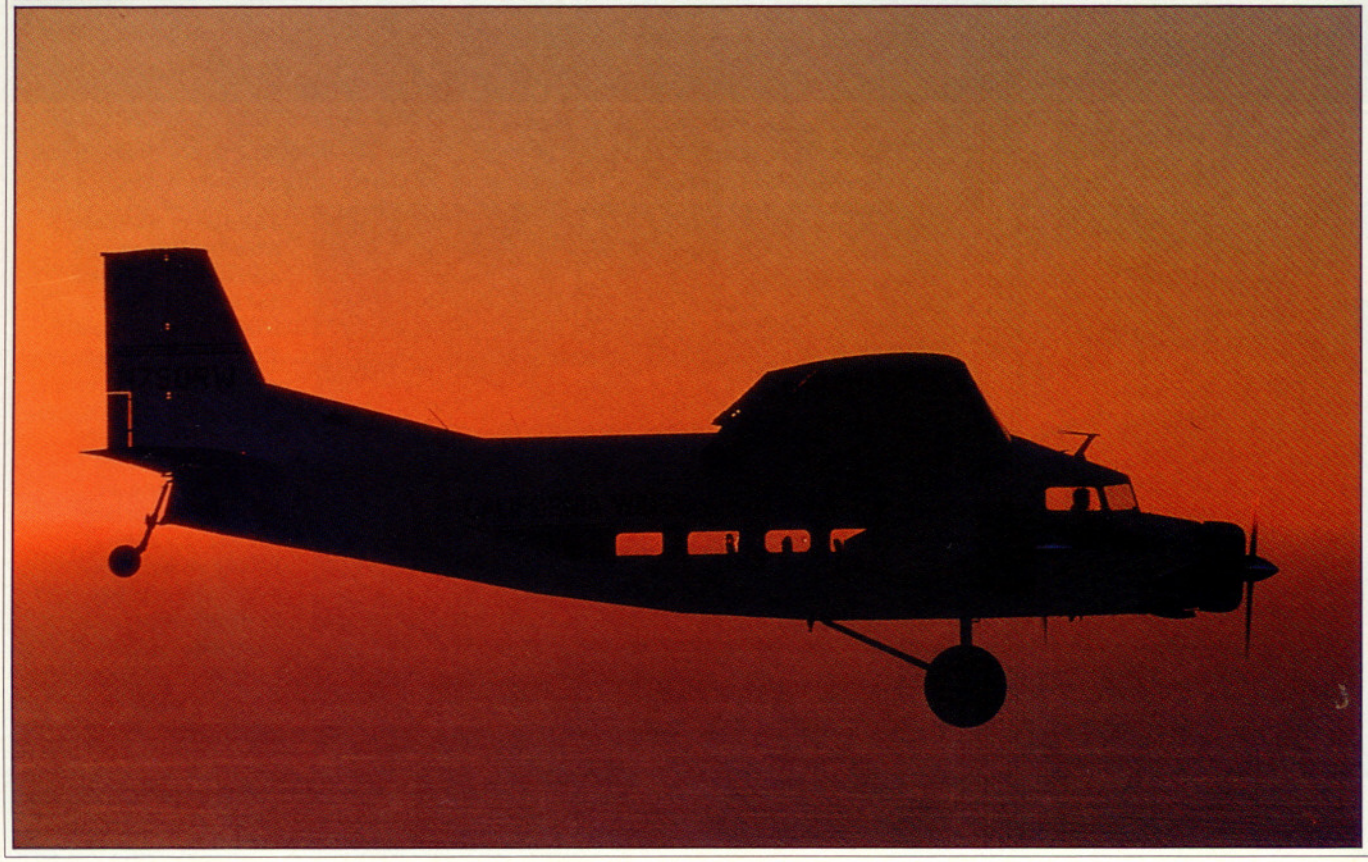


plane's 300-horsepower Wright Whirlwind engines for 425-hp Pratt & Whitney Wasps.

In its time, the Trimotor not only helped pioneer civil aviation, but also took men to the South Pole and helped form the legend of the forgiving, bulletproof Tin Goose. The coming of the Boeings and Douglases in the early 1930s spelled the end for the Fords; the new breed of transports was so much faster and more fuel efficient that the Trimotor's obsolescence came in a virtual wink of an eye.

The onslaught of the new breed of transports left the fleet of Fords to take on other tasks. With its outstanding short-field capabilities and virtually unbreakable manner, the Trimotor found work on the periphery, hauling cargo to and from small, unimproved strips and in remote areas.

Seeing that a good design is, after all, a good design, Aircraft Hydro-Forming, Incorporated, in the early 1960s undertook the daunting task of modernizing the Trimotor for use in the bush. This company was formed by a group of businessmen who saw the need for a bush airplane that could carry a substantial load. Though antiquated for passenger travel, the Ford design would suit those needs—but not without some help. William Stout had conceived several improvements to the Ford during its production run, and many of these were found and incorporated into the Bushmaster. Because of the similarity of the airplanes, you might think that the Bushmaster would have been built on the Ford's type certificate. Not so; those changes were so involved that the new airplane had to be certified on its own.

Bushmaster also concocted many changes to the Trimotor, including a switch to more modern Pratt & Whitney R-985s of 450 hp; these powerplants had seen good service in the Beech 18 and were substantially more evolved than either of the original Ford's motors. What's more, full NACA cowlings became part of the design; the Ford exposed its cylinder heads to the wind, unfaired and undaunted. External flying wires characteristic of the Ford disappeared. Those cables going back to the rudder have to contend with almost double the surface area of the Ford rudder; the vertical stabilizer was made larger, and a dorsal fin came aboard.

Less obvious but even more important to the Bushmaster's out-of-the-way cargo hauling abilities is the enlarged cabin. It is 18 inches wider and 12 inches taller than the Ford's, and the single door grew from a stylish oval to a large, package-swallowing rectangle.

A 450-hp Pratt hangs from the wing; fairings on pylons are largely cosmetic, given the airplane's 90-mph cruise. Imagine the Bushmaster to be built like a bridge, and you'd be right.

Ford-o-philes will also notice that the Bushmaster's wing uses a flush leading edge, rather than a Ford-style corrugated one. Also, on the number-two airplane, a Lockheed Lodestar tailwheel replaces the shorter Ford assembly, and the main-gear tires come from a Boeing 737. And no, not from the nosewheel of the jet—from the mains. Inboard of those tires are brakes from a Convair 580. They pack enough power, says Lauver, that it would be "real easy" to put the Bushmaster on its nose.

Lauver and I step through the large rear door and make our way up a narrow aisle to the front office. You'll never mistake the cockpit for that of a C–130, but the instruments and controls are arranged with at least a nod to ergonomics. Only the marking of the propeller controls with red handles and the mixtures with blue leaves you scratching your head. (Peccadilloes aside, the Bushmaster is light years ahead of the scattergun Ford in panel and control layout.)

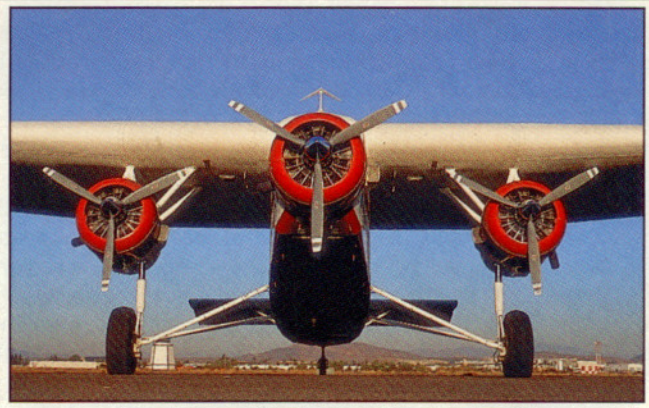
Up front, the pilots' seats are smaller and cheaper than even the worst airline pillions—in fact, aside from the lack of forward view, the rear of the airplane is the better place to be. Lauver prepares the right engine for start. In a flurry of starter, primer, magneto switch, and throttle pumping, the Pratt coughs to life. In a moment, its vital signs working slowly into the green, the nine-cylinder radial settles into an uneven idle. Until Lauver wakes the center engine, I keep thinking, "This is amazingly quiet. Better than a light single, in fact." Of course, once the engine ahead of the pilots' feet comes on line, any thought of casual conversation in the cockpit fades. With the left engine joining the din, we're ready to go.

Lined up on the runway, Lauver brings the big Pratts to just shy of full takeoff power, 33 inches of manifold pressure and 2,300 rpm. That's a bit over 400 hp from each engine, and even though we're lightly loaded, the Bushmaster glides forward in no particular hurry. If the fury of the engines were the sole indication of speed, we would have reached Mach 2 by the first turnoff. (Because of the noise, "we often lose radio communications until the first power reduction," Lauver says.)

I glance down to see the airspeed needle twisting slowly off the peg. A heartbeat or two later, the tail comes up; Lauver counts to three and tugs on the round, ship-like wheel.

Lauver had prepared me for the Otis-One departure, as he calls the maxi-

mum-performance mode, but no amount of discussion can prepare you for the eerie sense of levitation that follows. Call it 852 square feet of wing taking over, or even the hard labor of more than 1,300 hp, if you will, but the first exposure to what can only be called a generous climb gradient is breathtaking.



Lauver points to the wheel on my side. "You've got it." If the round, wood wheel doesn't spark off images of ships at sea, then the control response will. I try a few lazy turns. "It's a rudder airplane," Lauver comments. "Move your feet around." Indeed, any change in direction requires first a healthy shove on the rudder pedal, followed by enough aileron to trim the bank angle. Nothing happens quickly. "You have to call ahead for reservations," Lauver says, referring to the Bushmaster's leisurely roll rate. Once into a turn, you must start rolling in opposite aileron, lest the airplane continue banking through. You imagine the helmsman of the *Queen Mary* worked just as hard.

Where the Bushmaster is uncommunicative in roll, it's pleasantly direct in pitch. Pull on the wheel, and eventually it begins to climb. Mostly, trimming is academic, and the trim wheel feels anchored in concrete. You fly this airplane with your fists, not your fingertips.

Given those responses, the Bushmaster's incredible stability comes as a welcome surprise. It tracks through turbulence majestically. Heading and altitude excursions take so much time to spool up that keeping ahead of the airplane proves simple.

Of course, anything assaulting the air at around 100 miles per hour isn't likely to get ahead of the pilot too quickly. "You can go faster, about 110 mph, but you're just converting fuel into noise," Lauver says. He uses conservative power settings, around 55 percent in cruise, which offers up 85 to 95 mph in level flight. At this setting, the engines are sipping about 18 gallons per hour, as opposed to 50 gph in full-power mode and 39 gph at normal climb power. Each engine has a 120-gallon supply of fuel, and the outboards get 9 gallons of oil, whereas the center engine carries eight.

In multiengine aircraft, one powerplant usually is called the critical engine because loss of thrust on that side affects performance or handling—directional control, primarily—more so than would stoppage of the other engine or engines. Well, technically, the left outboard is the critical engine on the Bushmaster, but you'd have to look in the flight manual to prove it. Leveled off in cruise, Lauver had me looking out the right side for traffic. I felt a slight change in the airplane, noticed we were drifting a bit left, added a smidgen of rudder and aileron to bring us back around, and then went back to looking for the traffic.

Lauver chuckled, pointed to the left-engine manifold pressure gauge, and said, "Do we have a problem here?" The needle for the left engine lagged well below the other two. Hmm. "That's it, the critical engine," he said. We maintained flying speed of about 80 mph (Vmc, or engine-out minimum controllable airspeed, is 58 mph) and could begin a climb simply by tugging on the wheel. The center and right engines remained at low cruise power. Lauver then pulled power on the center engine. More left yaw, slight airspeed decay, and about as much excitement as a Narcoleptics Anonymous meeting.

For those with multiengine time and a burning desire to get a type rating in the Bushmaster, take heart. Soon, California Wings will begin typing pilots in N750RW; the cost depends largely on the skill of the applicant but should be around $3,000. (Type rating, you say? But the Bushmaster's 12,500-pound maximum gross weight should make it exempt. "Somewhere, sometime, someone in the FAA decided the airplane needed a type rating. We haven't got a decent answer as to why," Lauver says.)

Meanwhile, California Wings is finishing Part 135 approval for the Bushmaster, allowing the company to offer charter service; currently, the operation works under Part 91, with a restriction to take off and land at the same field.

And with that Part 135 approval, Lauver and O'Hare expect to begin sightseeing flights from other California locations and perhaps even Alaska next summer. If nothing else, it will give them a new audience from which the usual questions may emerge. Lauver admits he's thought of that. "But it's part of the mystique. We don't mind a bit," he says. Call it dues paying for keeping a part of history alive. □

Bushmaster 2000

Base price when new: NA

Current market value: approximately $250,000

Specifications

Powerplants	Pratt & Whitney R-985, supercharged, 450-hp takeoff at 2,300 rpm; 400 hp continuous at 2,200 rpm
Recommended TBO	1,600 hr
Propellers	Hartzell, three-blade, full-feathering, constant-speed, 95.5-in diameter
Length	50.7 ft
Height	13.4 ft
Wingspan	77.9 ft
Wing area	851.7 sq ft
Wing loading	14.7 lb/sq ft
Power loading	9.25 lb/hp
Seats	14
Cabin length	21.7 ft
Cabin width	5 ft
Cabin height	7 ft
Empty weight	7,500 lb
Gross weight	12,500 lb
Useful load	5,000 lb
Payload w/full fuel	2,840 lb
Max takeoff weight	12,500 lb
Fuel capacity, std	366 gal (360 gal usable) 2,196 lb (2,160 lb usable)
Oil capacity, ea engine	8 gal, center; 9 gal, outboards

Performance

Takeoff distance	606 ft
Takeoff distance over 50-ft obstacle	1,200 ft
Max demonstrated crosswind component	12 kt
Rate of climb, sea level	1,060 fpm
Critical-engine inoperative ROC, sea level	250 fpm
Max level speed, sea level	112 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption, ea engine)	
@ 75% power, best economy	95 kt/3.5 hr
5,000 ft	(168 pph/28 gph)
@ 50% power, best economy	82 kt/6.3 hr
5,000 ft	(102 pph/17 gph)
Landing distance over 50-ft obstacle	1,720 ft
Landing distance, ground roll	1,000 ft

Limiting and Recommended Airspeeds

Vmc (min control w/critical engine inoperative)	50 KIAS
Vx (best angle of climb)	55 KIAS
Vy (best rate of climb)	63 KIAS
Va (design maneuvering)	100 KIAS
Vne (never exceed)	126 KIAS
Vr (rotation)	50 KIAS
Vs_1 (stall, clean)	35 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. □