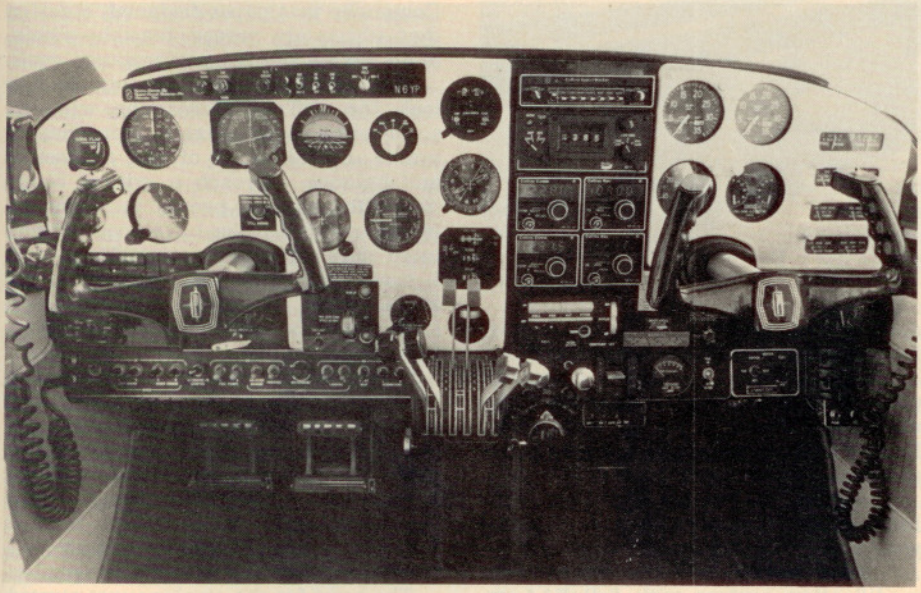
'Mark II' Twin Comanche

Rebuilt and refurbished to his own specs, this loaded lightplane answers one pilot's dream

The Robertson STOL, Miller 200 Jet Profile Twin Comanche gets off over a 50-foot obstacle in 1,120 feet, cruises at 223 mph. Cost of highly modified and "loaded" airplane, which started out as a used 1964 airframe, was significantly less than a new twin.



New, white-background panel reflects extensive addition of sophisticated flight instrumentation and nav/com gear.

by JAMES M. PHILLIPS / AOPA 4028

■■ "I know it's brand new, but what type of aircraft are you, November Six Yankee Papa?" asks the ground controller. For while a PA-30 shows on the flight plan, the craft he sees before his eyes shows no such resemblance.

I should say, "This is a Mark II Twin Comanche," but I answer, "Robertson STOL, Miller 200 Jet Profile Twin Comanche."

"Maintain 180 knots, Navajo Six Yankee Papa," requests approach control, since center has informed him of an arriving 180-knot blip with encoded altimeter readout.

To him, I merely acknowledge the instructions, because this versatile Mark II can comply, since it is the most modified and updated Twin Comanche flying today. Besides, it loves to be identified by its performance as a "Navajo."

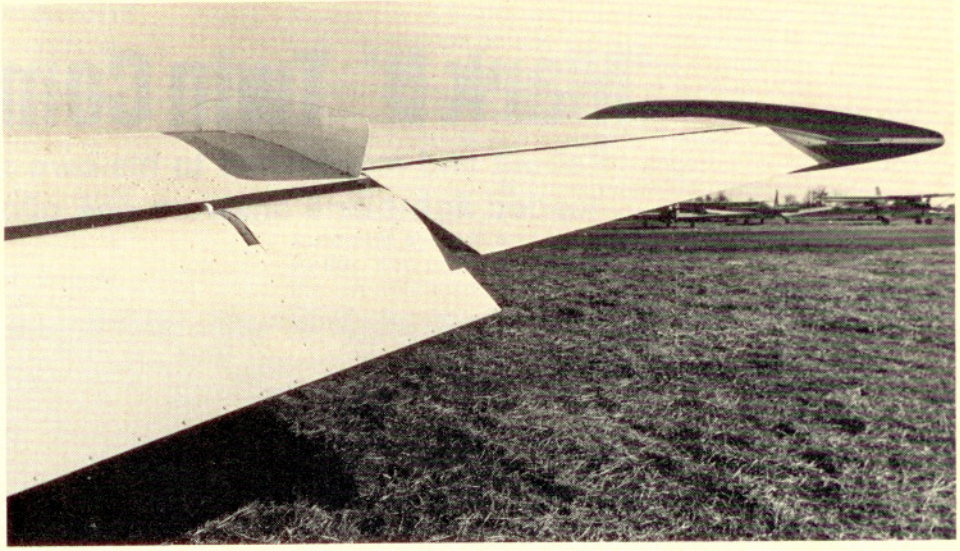
Why such pride in an airplane?

Two years ago, my engineering business developed the need for a light twin to cover the eastern part of the United States. Uppermost in my mind was the challenge not to buy an air-

MARK II TWIN COMANCHE

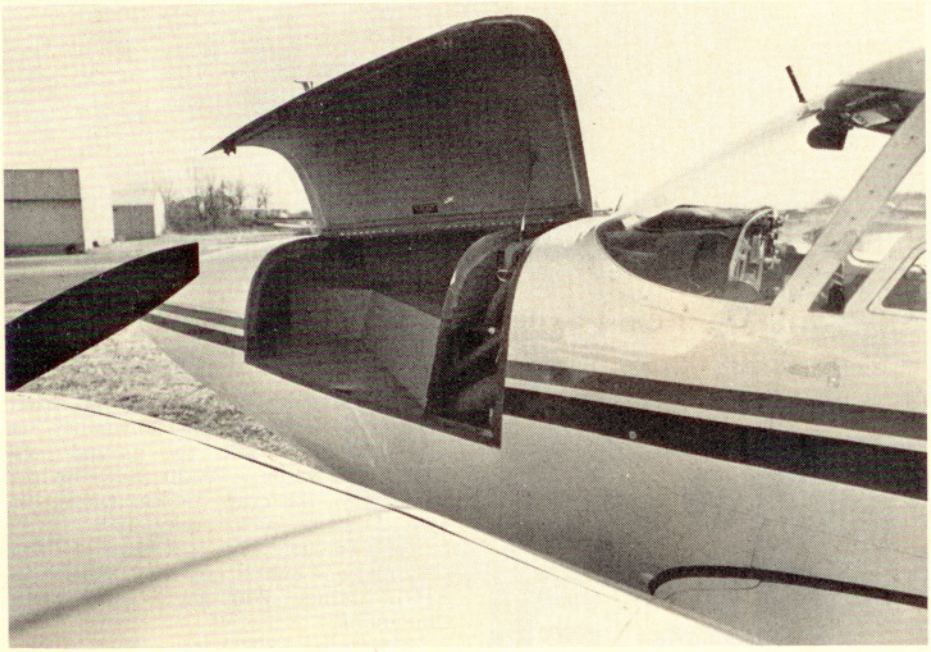
Specifications and Performance

Gross load	3,800 lb
Useful load	1,413 lb
Range:	
Max fuel, 75% power	1,250 sm
Miles per gal 75% power	11.3 mpg
Service ceiling	21,000 ft
75% cruise	223 mph
Stall w/flaps-gear	52 mph
Climb rate	1,900 fpm
Single-engine climb rate	500 fpm
Single-engine service ceiling	11,500 ft
Takeoff distance over 50-ft obstacle	1,120 ft
Landing distance over 50-ft obstacle	970 ft



As part of STOL conversion, ailerons lower along with flaps to provide full-span flap effect. Wing "fence" also adds to STOL performance.

Lengthened nose added speed, stability, looks—and room for an extra luggage locker.



craft off the factory shelf, for my special airplane had to outperform any available equipment including the Piper Aztec E, the Beechcraft Baron B55, and the Cessna 310. Yet it had to have a considerably lower initial outlay and operating costs.

While I have acquired well over a dozen singles and twins for personal or business use, my "fun airplane" was an experimental biplane made by a friend, and it had many more extraordinary features than the "store-bought variety." Although I was not qualified to whittle out a light twin by myself, I was determined to call on all my experience and limited budget to create the best flying machine for my needs.

The goal was simple and direct. The finished product under no circumstances would carry an experimental license. All work would be done by the best modification centers with full FAA approval, all equipment would be new and of the best quality—and all this would be obtained for less than any new factory product.

I selected for my reference and course guidance the three most recent AOPA PILOT Aircraft Directory Supplements, referring to the listings and specifications of multi-engine, piston.

Since the Piper Twin Comanche has been out of production since 1972, it is not listed as an available aircraft, although it is reviewed in the selected issues as a conversion, not only as a Robertson STOL but also as a Miller 200. Why not have the best of two worlds and combine both conversions in one airplane?

With no more complicated engineering than the arithmetic of selecting the best of the slow-flight performance figures for the Robertson conversion and marrying them to the best of the fast-flight performance numbers for the Miller 200 conversion, a "Mark II" Twin Comanche was paper-designed, a design that ultimately proved feasible within, or in excess of, the performance goals.

First of all, it would be ridiculous to look for a Twin Comanche with six seats when, with maximum instrumentation and full tanks of gas, the weight and balance approach a critical condition with only four people. Furthermore, in my travels I never have need to carry more than three passengers. More often I carry only two and frequently but one or none. Therefore, a lower useful load would be an acceptable specification.

Since money was at a premium, a four-place 1964 Twin Comanche best satisfied the requirements. Behind this model search was an initial conversation that I had had with Jim Miller, of Miller Aviation in Texas, who strongly advocated this early 1964 version because it was a strong, lighter-weight aircraft, particularly adaptable to his conversion.

The hunt for the airplane was started. Fortunately, right in my own backyard, my wife found one. Chuck Campbell, of

Campbell Aviation, a long-time friend, had a 1964 Twin Comanche that he used for his personal transportation in getting around the country between his operations where he sold and serviced Mitsubishis and Merlins.

The airplane was fully equipped with a Narco transponder, dual Mark 12 Narco transceivers, strobe lights, outside power receptacle, EGT gauge, Piper Altimatic II autopilot, glideslope receiver, Bendix ADF, VOA-4 and VOA-5 nav indicators.

At first he was reluctant to sell the airplane, because the engines had high time. I was anxious to get it because it was my intention to remove the engines and go with the 200-hp Miller conversion.

Accordingly, I bought the airplane for $24,000 and started with a plan. Chuck Campbell followed through with a 100-hour check, complied with all ADs and bulletins, and corrected anything that he thought was not just the way he would want it for himself.

Immediately I wanted to fly in that exclusive group of people who could consistently land a Twin Comanche with no apologies and to operate it from the short airfields in my territory with a margin of safety as promised in the literature for the Robertson STOL conversion kit. A phone call to Robertson soon had the aircraft on its way to New Orleans for a newly contoured wing leading edge, ailerons that give an effective 15 degrees of flaps for the full wingspan, spoilers between the fuselage and nacelles for better landings, wing fences to stop spillage of air across the wing and a large dorsal fin. The package came to $5,000.

What a difference. It cut literally 20 mph off the low side of the speed spectrum and chopped the stall speed, with gear and flaps down, to 52 mph! The normal approach, prior to this conversion, was 105 mph. By the time Robertson finished the modification and my reeducation, approach speed was down to 85 mph, over-the-fence at 80 mph, and touchdown about 65 mph with better than average landings. By the same virtue, the takeoffs were absolutely phenomenal, as Robertson insisted that the climbout be made with 15 degrees of flaps at 85 mph.

Their tests had proved conclusively that altitude is one of the safest attributes in an engine failure, provided the airplane is flown above the Vmc of 80 mph. This is another justification for the trip to New Orleans, for my Vmc was dropped 10 mph to 80 without the costly conversion to counter-rotating propellers. Simultaneously the gross and payload were increased 200 pounds to 3,800 pounds, making it a much more usable aircraft for operations in and out of small fields of only 2,000 feet in West Virginia, Pennsylvania, and Ohio.

The next item on the budget was a new interior, beautifully done in Batavia, Ohio, by Aircraft Upholstery. After removing all the original insulation and replacing it with extra thick, sound-absorbing material, they installed a very conservative interior in silver-gray corduroy trimmed in alabaster. The same fabrics and carpeting were used as in the Lincoln Mark IV automobile, and all had flame-retardant components. I wanted a quiet interior inducive to many pleasant hours at the controls and to a restful passenger atmosphere. Further down on the production schedule was a flashy paint job for the exterior of the aircraft. The interior cost was $1,200.

The time came once more to take the airplane to a major modification center, this time to Horseshoe Bay, Tex., where J. W. Miller Co. literally rebuilt the whole airplane. Their 1,000-hour option literally rejuvenated the complete airframe; it was competely stripped down and any part showing wear or any deficiency was replaced. Both engine mounts were removed, including the 160-hp engines with all their accessories. The bothersome cast-propeller extensions were scrapped, and thus a constant source of vibration and a potential area of failure were eliminated.

Factory-new engines and all new accessories, including electrically heated propellers were installed. Tip tanks were added to extend the range. Dual brakes, taxi light, ram's-horn controls with automatic electric trim, one-piece windshield, and extra-thick windows to assure a quiet cabin were also incorporated. An extra-long nose was added to enhance the appearance, increase the speed, stabilize flight characteristics and provide an additional luggage locker.

Miller Aviation also came up with the best Alumigrip paint job that I have yet seen, so perfect one pilot said, "Jim, it looks as if they dipped the whole plane." It had to be painted in bright colors and it is: cranberry and tropical orange on an all-white airplane, set off by white strobe lights on the tips and a red strobe on the tail.

With this $25,000 job, the total cost of my basic aircraft had come to $55,200. The conversion was complete, and the airplane was fully operational—but there was still one more step I wanted to take.

For the selection of upgraded instrumentation, I returned to The AOPA Pilot, first to determine basic requirements, and second to select by specification and by cost comparison the specific equipment.

From Texas, the airplane with its new 200-hp Lycoming engines went to Columbus, Ohio, for the installation of a sophisticated and modern, white instrument panel. There Capital Aircraft Electronics installed a new Century III autopilot with full radio couplers, including localizer and automatically engaging glideslope. A horizontal situation indicator, King KI-525 complete with a slaved gyro compass system and a King RMI beautifully display all information, yet act as the command post for this excellent autopilot installation. A Narco DGO-10 with an independent electric gyro provides a back-up system.

The old Bendix ADF was traded for a new digital Bendix T-12D. Collins Micro Line radios complete with an audio-control panel were selected, and we installed dual 720-channel transceivers with select, store, and recall capability and dual navigation receivers with to/from digital readouts. With this installation, Capital provided an instrument-hole-mounted RNAV, the King KNC-610, and a digital Davtron clock with flight-time recorder and elapsed-time meter.

You may think the remaining space on the panel would not accommodate another instrument, but the King KN65 DME with its remote readout fit neatly into a small area, as did the three-light marker beacon and encoding altimeter, as well as the original altimeter. Naturally, the small remote-control transponder by Narco, reworked to TSO acceptance, took up a minimum of space, as did the EGT for twin-engine operation.

Whoops, don't light up that cigarette! What used to be one ashtray now holds the clock, while the other contains the ammeter. (The switch for the strobe lights has replaced the cigarette lighter.) This final $14,000 package brought the price of my finished airplane to $69,200.

In the execution of this program, the selection of modification and installation centers justified a thorough evaluation. All participants performed excellent work at acceptable bid prices, which held the price of the Mark II to within 50% of a similarly equipped new light twin.

My Mark II is loved by all who have flown it, including airline pilots, instructors and fellow pilots. What aircraft available today can meet the basic specifications of a cruise speed of 223 mph; a service altitude of 21,000 feet; takeoff over a 50-foot obstacle of 1,120 feet; landing distance over a 50-foot obstacle of 970 feet; a useful load of 1,413 pounds; and a maximum range of 1,250 statute miles at 75% power? The rate of climb for both engines is 1,900 feet per minute; yet with one engine, 500 feet per minute—greater than that of any commercially built reciprocating light twin available today.

Radar? Not yet—but we're evaluating it. □