Mooney

The fastest, longest-range Mooney of all

BY THOMAS A. HORNE

PHOTOGRAPHY BY MIKE FIZER

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The numbers suggest a turboprop rather than a piston single: 237 knots, an 1,840-nm range, and a 25,000-foot ceiling. But no, the latest Mooney is yet another variation on the airframe and engine combination that has served Mooney so well over the years. Mooney's new Acclaim—type designator M20 TN—introduced with great fanfare at this year's Sun 'n Fun Fly-In promises to be the ultimate Mooney. It replaces the Bravo as the company's flagship model, and orders for 33 Acclaims had been taken by midsummer 2006. In another announcement just two months after Sun 'n Fun, Mooney rolled out yet another new design—the 310-horsepower, 196-knot Ovation3.

The key to the Acclaim's speed is its turbocharged, intercooled, 280-horsepower Teledyne Continental TSIO-550-G engine. A pair of Garrett turbos—one for each bank of cylinders—helps divide the compressors' workloads and give faster throttle response because of more rapid spool-up times. Mooney turbonormalized the engine by setting the turbos for a

PHOTOGRAPHY BY MIKE FIZER

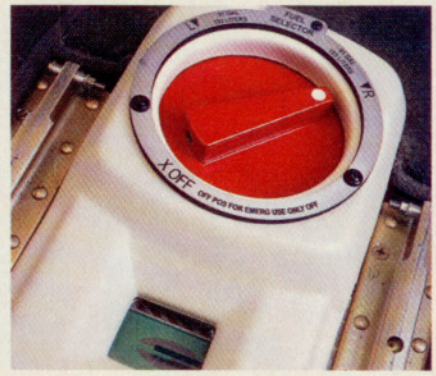
maximum manifold pressure of 33 inches. This, the company says, lets the Acclaim put out its full 280 horsepower all the way up to 20,000 feet or so, then put out some 262 horsepower up to the airplane's 25,000-foot service ceiling.

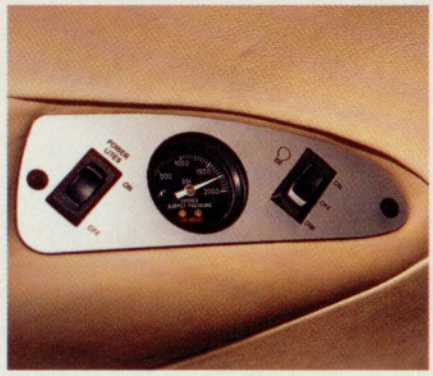
If there's a drawback to turbocharging, it's heat. Those exhaust-driven turbos can spin at 20,000 rpm, and glow orange when they work hard and send their dense, compressed air to the engine's intake manifold. To cool this flow of air, there are dual intercoolers (which look and act like small radiators) installed between the turbos and the manifold plumbing. Without them, thermal stresses on the cylinders could shorten their lives. But as it is, the intercoolers keep cylinder head temperatures near a relatively cool, 380-degree Fahrenheit level—even in the rarified air at Flight Level 250. The Acclaim's large, circular engine-cooling inlets also help by sending torrents of high-velocity air into the cowling.

Although the Acclaim's TSIO-550 is the same basic engine as the normally aspirated version in Mooney's Ovation3, it puts out 30 fewer horsepower, thanks to a derating provided by a reduction in engine compression ratio, doesn't work as hard, yet flies higher and faster (the Ovation3 claims a 196-knot maximum cruise at 20,000 feet)—all while enjoying the reliability benefits of low cylinder head temperatures.

The Acclaim's interior also has received some upgrades over preceding Mooneys. AmSafe air-bag seat belts are standard up front, and a $3,500 option for the two aft seats. The armrests are more streamlined and less intrusive, which creates slightly more cabin width. The brushed-metal door handle is of a new, bigger design that provides more leverage for opening and closing, has no sharp edges, and is based on the handle used in the Mooney PFM (the M20L, Porsche engine-powered Mooneys) built way back in 1988 through 1990. There's also a new A-pillar handhold, more foam on the seats' side bolsters and seat backs, and new control yokes that are deeper vertically, and leather covered. Options include a $27,900 air-conditioning system and—puzzling for an airplane of this capability—an oxygen system. A 77-cubic-foot oxygen tank runs $8,900; a 115-cubic-foot system is $10,900. You'd think oxygen would be standard equipment.

Like the rest of the Mooney line, the Acclaim comes with a Garmin G1000 avionics suite. Much has been said about the G1000, and its features complement the Acclaim's mission profile as well as they do those of airplanes of lesser performance. The G1000 does so much that it's impossible to men-





Cabin width is slightly increased because of changes in the door-handle and sidewall design (top left). Optional 130-gallon fuel tanks can be ordered; standard fuel capacity is 102 (top right). Left armrests (bottom left) include oxygen gauge and lighting controls. AmSafe inflatable air bags are standard equipment on the Acclaim's front seats (bottom right).

Larger engine-cooling inlets distinguish the Acclaim from earlier Mooneys. Flight-test data lead Mooney engineers to believe that a 237-knot cruise speed should be easily attained.

tion its full capabilities in this space. To be brutally brief, suffice it to say that leaning is a snap, thanks to the exhaust gas temperature symbology; situational awareness is excellent, thanks to the multifunction display's huge moving map; fuel status pages give you a precise count on gallons used, and time remaining in the tanks; and XM Satellite Weather datalink information gives both the big and small picture of the weather situation. As for ice protection, there's the optional $42,300 TKS "weeping wing" system that forces a glycol solution through tiny pores in wing leading-edge panels. The Acclaim's TKS installation will be approved for flight into known icing, according to Mooney.

As of this writing, Mooney has selected the Meggitt/S-Tec System Fifty Five X as its standard autopilot. Altitude preselect functions work with the altitude selector residing on the G1000's vertical-tape altitude presentation, so press the Fifty Five X's ALT and VS keys simultaneously, dial in your desired rate of climb or descent, and the Acclaim will level off at the target altitude. Certification tests for installation of Garmin's own, truly integrated autopilot/flight-control system—the GFC 700—are expected to be completed by autumn 2006. The GFC 700 will be offered as an $11,000 option.

Aggressive Acclaim

My flight in the Acclaim took place on a Sunday shortly after Sun 'n Fun, in late April 2006. Why Sunday? Because the airplane was still in flight test, and the rest of the week was taken up with

SPECSHEET

Mooney Acclaim

Base price: $495,000

Specifications

Powerplant	TCM TSIO-550-G turbonormalized twin turbo, 280 hp
Recommended TBO	2,000 hr
Propeller	Hartzell three-blade
Length	26 ft 9 in
Height	8 ft 4 in
Wingspan	36 ft 1 in
Wing loading	19.2 lb/sq ft
Power loading	12 lb/hp
Seats	4
Max gross weight	3,374 lb
Useful load	1,015 lb
Fuel capacity, std	102 gal
Fuel capacity, w/ opt tanks	130 gal

Performance

Takeoff distance (max wt)	960 ft
Rate of climb, sea level	1,240 fpm
Normal cruise speed @ 25,000 ft	237 KTAS
Long range (std fuel w/ res)	1,445 nm
Long range (opt tanks w/ res)	1,840 nm
Service ceiling	25,000 ft

For more information, contact Mooney Airplane Co., 165 Al Mooney Road North, Kerrville, Texas 78028; telephone 830/896-6000; www.mooney.com.

All specifications are based on manufacturer's estimates beacuse the Acclaim is not yet certificated. Weight and performance may be impacted by selected options. Cruise speeds may vary from aircraft to aircraft. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

all manner of certification and documentation trials. (Performance figures and other specifications within this article, therefore, are all preliminary in nature.)

Although the Acclaim may be the ultimate Mooney, it's still a Mooney, and starting, taxi, takeoff, climbout, and landing were typical of the breed. The landing-gear handle—relocated because of the real estate claimed by the G1000—is down on the subpanel, just above your right knee. You'll also notice the Fifty Five X's go-around button to the left of the throttle. Target airspeeds were still in development, so I had to use ballpark numbers from test pilots' research.

Flaps were set at 10 degrees for takeoff, a typical Mooney procedure, and after the pretakeoff checks it was time to take the active runway at Mooney's home field at Louis Schreiner Field in Kerrville, Texas. I pushed up the throttle, the turbos kicked in almost immediately, and off we went. From my notes I see that we sustained a 1,400-fpm rate of climb through 15,000 feet, and reached 16,500 feet in just 14 minutes. This with two aboard and the standard tanks topped off.

On the way up, fuel flows hovered around 34 gph (the Acclaim is no fuel miser at high power settings), we used an en route climb airspeed of 113 KIAS, and the number-five cylinder was the hottest, at 360 degrees F.

Mooney says the Acclaim tops out at 237 KTAS at FL250, so at 16,500 feet our speeds were somewhat less. Here are the high-speed cruise numbers for that altitude, on that day. Drum roll, please: 30.5 in mercury manifold pressure; 2,520 propeller rpm; minus 4 degrees Celsius outside air temperature; and a mixture leaned to a turbine inlet temperature of 1,700 degrees F, which, at 50 degrees rich-of-peak TIT, is best power. The result was a fuel burn of 19 gph, and a true airspeed of 212 knots. Mooney says that the Acclaim's miniwinglets, which add 4 inches to the wingspan, help boost cruise speeds by reducing induced drag.

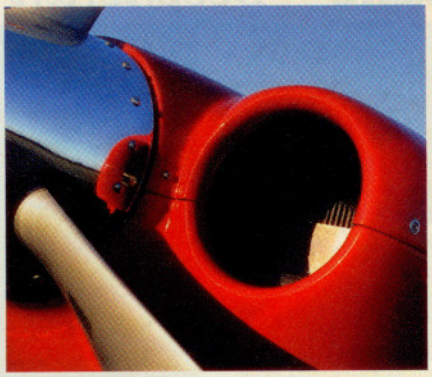
On the way down, I leveled off at 11,500 feet for more data. There, high-speed cruise power (32 in Hg manifold pressure, 2,500 rpm) yielded 204 KTAS with a fuel burn of 21.4 gph.

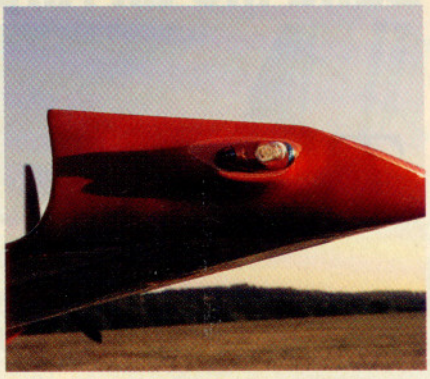
These are very respectable numbers, with perhaps the exception of the fuel burns. The Acclaim probably will tie the Colum-

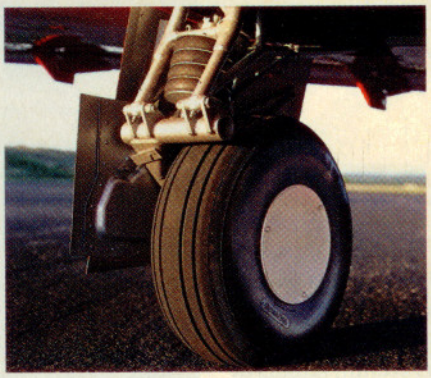
The Acclaim uses a Garmin G1000 avionics suite as standard equipment. Currently, the Meggitt/S-Tec System Fifty Five X serves as the autopilot and flight control system. Garmin's new GFC 700 autopilot will be offered as an option.

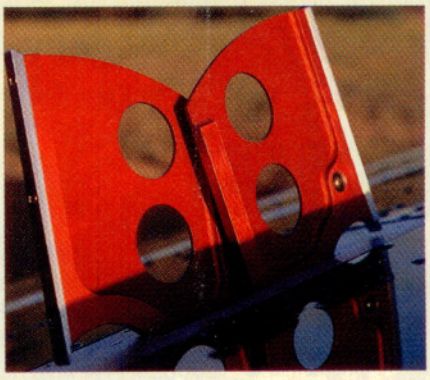
bia 400 for the fastest current-production general aviation piston single. And although fuel burn is fast becoming a factor in this era of pricey gasoline, it is offset by the versatility and range offered by the optional 130-gallon fuel tanks. Mooney says that at long-range power settings, those 130 gallons can produce a range of 1,840 nm, with 45-minute reserves. The optional tanks ($9,900) will be installed by Monroy Aerospace, of Coral Springs, Florida. Standard-capacity, 102-gallon fuel tanks—which should give 1,445-nm ranges at long-range power—will be installed at the Mooney factory.

Back in the pattern, it's time to plan ahead so as to slow down to an appropriate airspeed. In a Mooney, it can be easy for the complacent to barge onto downwind carrying a 130-knot head of steam! The drill is to reduce power well in advance, then lower the first notch of flaps as soon as you enter the top of the airspeed indicator's white arc—at 110 KIAS.









Thanks to those cowl air inlets, CHTs stay under control (top left). New winglets (top right) add a few inches of wingspan and help add knots at altitude. The Acclaim retains many signature Mooney design elements, such as the landing gear's rubber-sleeve (bottom left) and PreciseFlight speed brakes (bottom right).

You can use the Acclaim's standard-issue Precise Flight speed brakes to help you slow down. Come down final at 80 KIAS, go to 75 KIAS when you put down the last, 33-degree-flap deflection, and get ready to re-trim nose-up to counter the pitch change with flap extension. Unless it's really windy, or the runway is comfortably long, you can let airspeed bleed off to 70 KIAS as you cross the threshold. Then it's a matter of holding the nose off, and letting the airplane settle to the runway. Try to force the Acclaim—or any Mooney—to the runway with excess airspeed, and be prepared for some aggressive porpoising and bouncing. And a potential go-around if the gyrations get too wild.

Fast forward

Mooney is on the move these days, and the move is toward solidifying its hold on the high-performance piston-single market.

With the Ovation2 GX ($438,000, 190 knots), the Ovation3 (approximately $460,000, 196 knots), and the Acclaim ($495,000, 237 knots) there's a range to choose from.

But you have to wonder. Has the basic Mooney airframe reached the limit of its adaptability to new design concepts? If so, what will the next Mooneys be like? The company can't stand still and, barring a merger or other bold move, doesn't appear to have the funds for tooling up and assembling an airplane other than one wrapped around the sturdy, proven M20 airframe we all know so well.

Having mined the fire-breathing piston-single niche, where would Mooney like to go next? A light-sport design based on the M20 airframe? A turboprop single? Either way, Mooney will have gone full circle. A light-sport aircraft design evokes the 850-pound, 108-knot Mooney Mites of 1948. A turboprop reminds us of a more recent Mooney foray: In 1989 Mooney teamed with Socata to make the TBM 700; it's the M in TBM. AOPA

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