A HIGHER EDUCATION

Mooney sends a 201 to school and gets back an Advanced Trainer.

BY MARK R. TWOMBLY

Yes, it looks like a flying barber pole, but there is an excellent reason Mooney Aircraft's latest model is done up in vibrant red and white stripes: conspicuity, the ability to attract attention, if not admiration. These airplanes will spend most of their flying time close to their home bases, and Mooney wants to be sure that, in the concentrated traffic around airports, its new Advanced Trainer (AT) will be noticed, for collision avoidance purposes, as it fulfills its mission of training pilots for advanced ratings. ■ The AT is a Mooney M20J 201

PHOTOGRAPHY BY MIKE FIZER

that has been specifically tailored for the training role. Mooney is attempting to create a new market niche, that of the high-performance-single trainer. The AT would fill the gap nicely between an entry-level complex trainer such as a Cessna 172RG and a piston twin. It could even foster the kind of brand loyalty—student trains in Mooney AT, decides later to buy 201 or other Mooney model—that contributed to much of Cessna's and Piper's past success.

Pilot training programs at colleges and universities represent a potentially lucrative market opportunity for general aviation manufacturers. Piper capitalized on this by selling the University of North Dakota several hundred new airplanes to replenish the school's fleet.

The UND purchase includes not only the Cadet, a primary trainer version of the Piper Warrior, but also retractable-gear Arrows and Seminole piston twins to use as advanced trainers.

Piper's success in selling some of its high-performance models as trainers was not lost on Mooney. To promote the

idea of Mooneys as trainers, the company flew a 201 around to schools and colleges that offer flight training. The airplane was well-received, but it was apparent that Mooney would have limited success convincing large flight training organizations that an off-the-shelf 201, which is a marvelous personal airplane, could make the grade as a workhorse, 1,000-hours-a-year student trainer. It just isn't configured for the daily grind of teaching fresh young pilots the intricacies of operating a high-performance single.

Mooney officials returned from the tour determined to pursue the flight training business. But first, the company made some changes intended to reduce the cost and complexity of maintaining a 201 while increasing its reliability. It started at the nose, by eliminating the

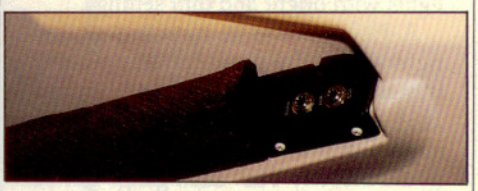
ram air inlet, a small portal beneath the spinner that, when opened at altitude, increases manifold pressure about one inch by by-passing the air filter. The AT will be flown at relatively low altitudes most of the time, so the ram air feature isn't needed. In addition to saving a few dollars in materials and manufacturing costs, eliminating the ram air precludes the possibility of a student opening the inlet on the ground and the engine ingesting harmful dust and dirt.

The oil access door was made larger so students can get a better peek at the engine compartment during the preflight inspection. The door also has two latches and a stronger hinge to stand up to frequent use.

Mooney switched from electric cowl flaps, which are standard on the 201, to mechanical three-position cowl flaps on the AT. The outside air temperature gauge is a probe on the pilot's side window instead of the underwing thermocouple and associated wiring that is standard on the 201. In both cases, a few dollars are saved up front, and potential maintenance items are avoided.

A plug to connect a ground power unit is located on the rear fuselage just aft of the battery access door. What with hot starts and cold mornings, dying and dead batteries are common in the training environment, so the GPU plug is standard on the AT.

Mooney switched from a 28-volt electrical system on the 201 to a 14-volt system on the AT. That may seem like a step backward, but Mooney found that schools favored a 14-volt system for compatibility with other airplanes in



their training fleets. The lower voltage also means the AT can be jump-started with a truck or car battery in a pinch.

A 14-volt system was deemed adequate for the AT's standard King avionics package, which includes dual nav/coms, ADF, DME, and transponder with blind altitude encoder. The panel also houses an Alcor single-probe exhaust gas temperature and cylinder head temperature gauge. A stand-by electric vacuum pump is standard equipment. Circuit breakers are clustered on the right side of the panel. It's a simple matter for an instructor to surreptitiously reach up

and pull a circuit breaker or two, then wait to see how long it takes the student to notice something is amiss.

The standard panel is devoid of several popular IFR aids, including area navigation, HSI, and autopilot, although the equipment can be ordered as options. Students will have to be sharp with their E-6Bs; the airspeed indicator does not have a true airspeed scale.

Dual brakes are standard, as are single-point inertial reel restraint belts. The panel is white so that instruments and gauges stand out in bold relief. The yokes are black; sweat and grime from students gripping the yoke won't be noticeable. Each yoke is fitted with an illuminated approach plate holder.

The carpeting is made from special long-wearing fiber, but that doesn't mean it looks like artificial turf. The AT's interior is not austere. The fabric is attractive and comfortable, leather trim decorates the sidewalls, and the headliner contains four separate indirect lights with bright and dim settings.

A Hobbs meter is mounted on the right side of the panel for easy reading (it's under the right subpanel on the 201), and engine gauges are the same small Sigma Tek needle gauges installed in the Mooney TLS. Each gauge can be removed and replaced without disturbing the other gauges. The 201 has two-inch electronic tachometer and manifold pressure gauges, while the AT has three-inch mechanical gauges.

The AT is configured for three- and four-person training flights. The front seats do not have headrests, which obscure the rear-seat passengers' view of the activities up front. Also, a four-place, built-in David Clark Isocom intercom system is standard on the AT. The pilot's intercom position has a third receptacle so an external microphone can be plugged in and be ready for use in case the headset mike malfunctions.

Map pockets are sewn in both the left and right kick panels, and the visors are put to good use: The left visor has check lists imprinted on it, while the right side has power settings.

The rest of the AT is pure 201. The airframe is the same, the engine is the same 200-horsepower IO-360, the two 32-gallon fuel tanks are the same, and the exterior high-visibility lighting package—three-position strobes and wingtip recognition lights—is identical. The AT also has the same sparkling performance as the 201, and that makes it a desirable advanced trainer.

Russell Rice, who is in charge of AT sales for Mooney, accompanied photographer Mike Fizer and me on a day of flying around the Texas hill country in the first AT off the production line. The three of us departed San Antonio International and flew a practice ILS approach under the hood back into SAT before leaving the area.

The Mooney's aerodynamic cleanliness enables it to fly very fast on a miserly fuel flow—we cruised to Fredericksburg, Texas, at 7,500 feet, indicating 145 knots (166 knots true) on 10.2 gallons per hour—but it also forces the pilot to work at controlling speed in the terminal area, especially on approach. Failure to plan ahead for the approach can easily put you behind the airplane, and you likely will find yourself too fast on final. Approach speed is critical because the AT refuses to land at any speed much above stall. It cannot be forced onto the runway; the wings are long, and the gear is short and stiff.

One option that could add a new dimension to a student's introduction to high-performance airplanes is speed

Mooney AT
Base price: $119,900

Specifications

Powerplant	Lycoming IO-360-A3B6D 200 hp @ 2,700 rpm
Recommended TBO	1,800 hr
Propeller	McCauley, constant-speed, two-blade, 74-inch diameter
Length	24.67 ft
Height	8.33 ft
Wingspan	36.08 ft
Wing area	167 sq ft
Wing loading	16.4 lb/sq ft
Power loading	13.7 lb/hp
Seats	4
Cabin length	9.5 ft
Cabin width	3.6 ft
Cabin height	3.7 ft
Empty weight	1,825 lb
Gross weight	2,740 lb
Useful load	915 lb
Payload w/full fuel	531 lb
Fuel capacity, std	66.5 gal (64 gal usable) 399 lb (384 lb usable)
Oil capacity	8 qt
Baggage capacity	120 lb, 17 cu ft

Performance

Takeoff distance, ground roll	850 ft
Takeoff distance over 50-ft obstacle	1,770 ft
Max demonstrated crosswind component	11 kt
Rate of climb, sea level	1,025 fpm
Max level speed, sea level	175 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption, ea engine)	
@ 75% power, best economy 8,000 ft	169 kt/4.9 hr (64.8 pph/10.8 gph)
@ 65% power, best economy 8,000 ft	158 kt/5.5 hr (56.4 pph/9.4 gph)
Service ceiling	18,800 ft
Landing distance over 50-ft obstacle	1,988 ft
Landing distance, ground roll	920 ft

Limiting and Recommended Airspeeds

Vx (best angle of climb)	69 KIAS
Vy (best rate of climb)	88 KIAS
Va (design maneuvering)	116 KIAS
Vfe (max flap extended)	115 KIAS
Vle (max gear extended)	132 KIAS
Vlo (max gear operating)	
Extend	132 KIAS
Retract	107 KIAS
Vno (max structural cruising)	176 KIAS
Vne (never exceed)	198 KIAS
Vs1 (stall, clean)	63 KIAS
Vso (stall, in landing configuration)	55 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. □

brakes. They also could be called descent aids. At 8,500 feet, we reduced power, deployed the speed brakes, adjusted pitch to 10 degrees nose down, and let the airspeed build to the top of the green arc. The VSI pegged at 2,000 feet per minute.

Rice briefed me on procedures that could be used for an approach to a large airport with jets queuing up behind an AT. Fly the descent to initial approach at up to 160 knots and, when leveling off, pop the speed brakes. This bleeds off 20 knots. Reduce power to achieve the 132-knot gear-down speed. At the outer marker, select gear down and approach flaps, and complete the approach at normal speeds.

I had a chance to use the technique later that night at the end of a flight from Fredericksburg to Dallas-Fort Worth International. It was a spectacularly clear night, and the lights from all the airplanes converging on DFW looked like bees returning to the hive.

Everyone was making visual approaches, so the traffic ahead and behind was visible. The approach had to be flown relatively fast until short final. The speed brakes enabled me to fit into the high-speed dense pack of DFW and still make a normal landing.

Mooney is offering the AT exclusively to flight training organizations; it is not available to individuals. The base price, which includes the IFR avionics package, is $119,900. That is somewhat less than a 201 equipped with the same avionics, but the AT lacks the 201's ram air inlet, 28-volt electrical system, and other features. Mooney also saves by standardizing the interior and avionics in the AT, which reduces the time spent in final assembly. The AT is intended for batch sales, which will enable Mooney to achieve some economies of scale and also reduce the seasonal ups and downs in production of its other models.

The AT should make an excellent trainer, one that both student and instructor are eager to fly. (Unless they object to red and white stripes, in which case custom paint can be ordered.) It delivers on the performance promise and is demanding enough so that a student will not be able to count on the airplane to cover up the pilot's mistakes. A Mooney is not difficult to fly, but it penalizes sloppy procedures. If the point of advanced, high-performance training is to produce a pilot capable of thinking faster than the airplane, then the AT is one to look at. □