AOPA

MILLENNIUM MOONEY

High time

As the millennium begins, the Millennium ends

BY MARC E. COOK

Horologists and work-avoiding mathematicians have experienced a collective gnashing of teeth this year as the world has proclaimed itself entered into the next millennium. We're even a bit guilty of it by building and promoting the Millennium Mooney sweepstakes airplane during 2000. But we're about to make amends, because the lavishly equipped 1987 Mooney 201 is ready and will land a new home (could it be with you?) right after the first of the year, solidly in the true, technically correct new

PHOTOGRAPHY BY MIKE FIZER

The completed panel—by Pacific Coast Avionics—holds just about everything you'll need, including big-picture UPS Aviation Technologies' stack, Vision Microsystems' engine-monitoring equipment, and a Century Triden autopilot.

millennium. So stop cringing, you guys.

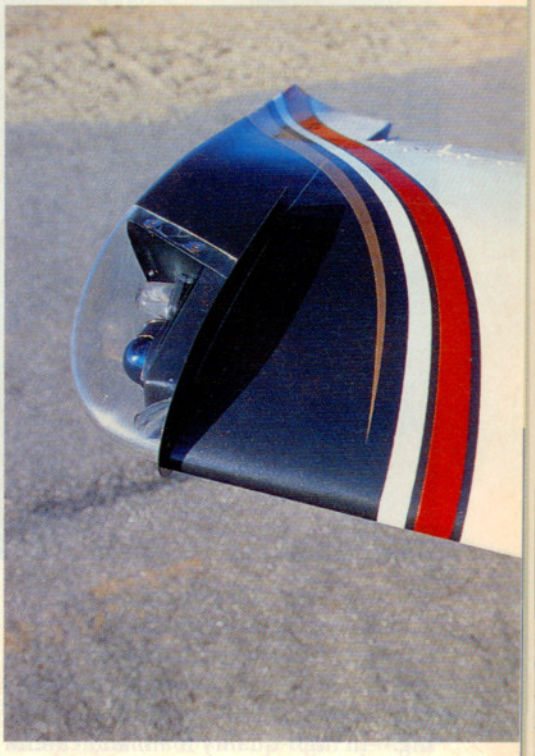
As the pages flew off the year-2000 calendar, the Millennium Mooney continued its steady migration from Midwest to Northwest to Southwest. Immediately after Oshkosh, the airplane headed west for a short return visit to Pacific Coast Avionics, in Aurora, Oregon, for some touch-up work. You know, those niggling items that weren't quite right when the airplane had to make haste for Florida way back in April. (If you think these low-level glitches are uncommon, just wait until you do a refurb on the scale of the Millennium Mooney. Not only are these things to be expected, but you should absolutely plan for them. Ninety-nine percent of the time, it's no fault of the installer, either; as with any big job, it's incredibly easy for some details to get left undone.)

Soon after Dewey Conway and his PCA crew were done with the Mooney, it aimed its pointy spinner in the general direction of Scappoose, Oregon, where the interior work was to be conducted. Oregon Aero is best known for its headset conversion kits—in which the standard ear seals are replaced with ones made from temperature-sensitive ConforFoam—but the company has been making tracks with replacement seat foam for the last two years. In fact, we had Oregon Aero do the work on the Timeless Tri-Pacer's seats in 1998 and were sufficiently impressed to ask the firm to give us the latest-generation pieces for the Mooney's interior.

Our plans for the interior were straightforward. The Mooney's interior plastic was faded and cracking in places but generally in good condition. Rather than build up entirely new panels or commit major surgery to the standard items, we elected to re-cover the plastic we already owned. There's some compelling logic here. First, you can make repairs to the plastic and strengthen the panels where necessary. This is often a far easier task than getting new panels and slogging through an interminable try/cut/fit process to make them look right. (Also, when you replace one piece of plastic, you'll have to paint it or replace everything if you want the colors to be the same.) In many ways, an aircraft interior is pieced together like an Italian motorcycle; no two are precisely alike. Second, a good, flexible covering material will provide you some real color flexibility as well as reasonable hope of it all looking good a few years down the road. Painting plastic is often a gamble in this regard.

So cover it was. Oregon Aero's Mike Dennis worked with installer Dave Shelton to come up with a light-gray-colored, wool-like material that was flexible enough to fit around the Mooney's contoured interior yet also thin enough to make the fit look generally good. The material appears to be robust enough to prevent pilling and thinning in high-wear locations such as the windowsills opposite passengers' shoulders.

A dark-gray wool carpet covers the floorboards and runs up the sidewalls ahead of the front-seaters' feet; this is an area where most Mooneys begin to look a bit threadbare, mainly because



it's hard to keep your boots under control in the tight footwells. Along with the factory-installed (and superb-condition) soundproofing kit, the thicker carpet helps to reduce the cabin din appreciably. (You won't, however, mistake the Mooney for a cabin-class airplane, thanks to the tight and stiff airframe, busy four-cylinder engine, and proximity of the windows to the passengers' heads.)

Of course, our real motivation for bringing the Millennium Mooney to Oregon Aero was to get some of the best seats in the business, and we were not disappointed. Dennis' idea of the perfect seat is often at odds with that of the original-equipment manufacturers; a part of the disagreement is easy to comprehend. For the most part, the OEMs are hidebound by parts commonality

Oregon Aero's latest-think seats are set to prop four riders in the Millennium Mooney. Their stock appearances are deceiving because these seats are vastly more comfortable than the standard items.

and the relentless screech of the accounting department to keep costs low. Dennis has no such constraints and spends the $750 per seat he charges—that's exclusive of any kind of covering!—in high-quality foam and careful design. Part of Oregon Aero's burgeoning business comes from the military; it makes cushions for ejection seats installed in a wide variety of fixed-wing fighters and bombers, as well as basic cushions for a bunch of helicopter applications.

Dennis has studied at length the interaction of various foam compounds with the human body in crash scenarios. He's tested his seat-cushion designs in a number of different seats and has noted significant reductions in the amount of energy delivered to the flesh-and-bone cargo. He could sit down and talk your eyes crossed in the finer points of impact dissipation, energy consumption, crush angles, and weight distribution, but you could boil his philosophy down to some simple concepts. First, Dennis wants your body to distribute its loads as evenly and widely as possible in the chair. Second, he wants you to have appropriate support on those square inches of tissue that contact the seat. And, third (and perhaps most crucially), Dennis wants you to have proper posture. "I'm amazed at some of the stock seat designs," he says. "They place you in this bucket and, often, give you either no support at all or support in the wrong places." He shakes his head and launches into another anecdote about someone coming to him with serious back pain only to have it relieved with a few well-chosen seat modifications.

Critical to the Dennis theology on seat design is proper pelvis placement. His belief is that too many of the stock seats rotate the top of your pelvis toward the rear of the airplane, which in turn forces the spine to curve, and the solution to that is to provide lots of lumbar support. "But if you get the pelvis oriented right," he maintains, "you don't need as much lumbar support."

So it is that upon first seating, the Millennium Mooney's seats feel a bit odd, with a lower-cushion shape that helps rotate your pelvis forward slightly and provides modest lumbar support. What's more, they look an awful lot like the verifiably uncomfortable chairs that were in there before. Worry not. The seats are amazingly comfortable and supportive, and not just from the quality of the design but also from the execution. We added headrests—they weren't part of this 201's Lean Machine package in 1987—graciously donated by Leather Tech Aircraft Interiors, in New Braunfels, Texas, and kept the individually reclining rear seats. (In earlier 201s, the rear seats are arranged as a bench, making the cabin just that much less flexible.)

As we went to press, the Mooney had been on a number of long flights as well as a precious few short ones, and we're

UPS Aviation Technologies' stack has served us well in the Millennium Mooney, particularly the flexible MX20 multifunction display. Just when you think that you can't figure out complicated airspace, there's the color screen showing you the way.

pleased to report that the Oregon Aero seats perform as promised. Although the backseats have yet to see much use, the fronts have proven to be comfortable and supportive for different physiques. Be warned, though; should you be the lucky winner from Fargo, you'll notice the seats to be quite ...umm...firm for the first few minutes. That temperature-sensitive foam lives up to its name. Other interior modifications include rewebbed belts by Belt Makers in Torrance, California, and powder-coated yokes sourced from Top Gun Aviation.

Upon completion of the interior, the Millennium Mooney headed to AOPA Expo in Long Beach, California, after a brief stop at Top Gun in Stockton. You may remember that the airplane began its refurbishing journey with Tom and Mark Rouch, and a handful of squawks were tended to. For example, the now-infamous accessory-case seal airworthiness directive that afflicted a number of Lycomings was finally confirmed to be applicable to our airplane and then remedied. (We owe a tip of the hat to engine overhauler Mattituck for having the replacement piece and getting it into our hands with zero fuss. At the time, even the large parts houses were long since out of stock.)

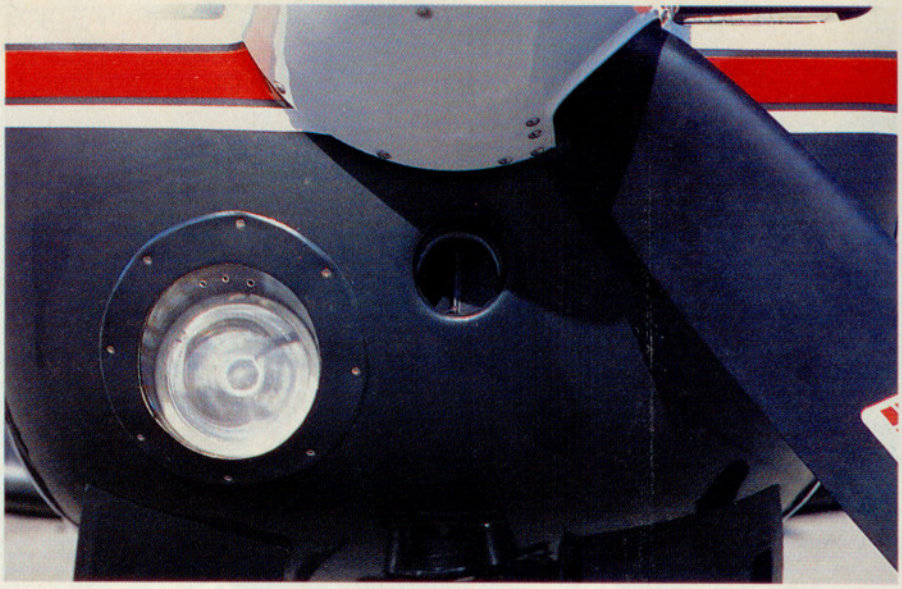
As the airplane heads back to AOPA's Frederick, Maryland, headquarters to await the final drawing of the lucky winner's name, we'll take a moment to reflect on the project as a whole. Naturally, we wish the Teledyne Continental Motors/Aerosance FADEC system had been ready to put into the airplane. We think this is one piece of technology that, in concert with other projects under way at Lycoming and Unison as well as similar efforts, will stand us in good stead in the coming decades. Availability of aviation fuel is always going to have a huge impact on the cost of flying, and it's not a big stretch to imagine that lead will not be with us forever. Technologies like the TCM FADEC will help us get the most from our existing engines, which remains the best avenue for the fleet of airplanes flying today. (It's safest to assume that engines of the future are for airplanes of the future, too.) Certification delays have put the TCM/Aerosance efforts back a bit, and it's perfectly understandable for the company to focus its manpower on the big-inch engines of its own. No doubt, the Lycomings will see their FADECS—just later.

That said, the Mattituck-overhauled IO-360 churns away, getting better with every hour in the air. Early concerns about high cylinder temps have disappeared as the engine has broken in and the temps came down into the normal range. Indeed, the Red Gold engine now sips oil at the rate of a quart in 15 to 20 hours and hits a maximum cylinder-head temp of a moderate 380 degrees at maximum-cruise power on a hotter-than-standard day. We're happy with that. Also, the little four-banger is almost embarrassingly easy to manage.

Running happily at 2,500 rpm for cruise and climb, the 200-horsepower engine needs not much more than a tweak on the red knob at the top of cruise to be totally content.

Likewise, every time we fly this airplane we're encouraged at the rate of development in avionics. UPS Aviation Technologies' stack has worked without a hitch, and we're finding new and novel uses for the big MX20 multifunction display. With two basic screens (one for VFR pilots, the other tailored to the IFR set) as backups, we've been tweaking and playing with the customized map probably to the exclusion of radio calls and mixture management. The rest of the stack has proven that new ideas are often the best and that miniaturization pays dividends beyond finding panel space; the whole stack is amazingly light.

Our underlying philosophy with these sweepstakes airplanes is to be an early adopter so you don't have to. Indeed, we're among the first to be using the Vision Microsystems engine-data package in a certified airplane; it's been on the experimental market for some time. A few of us were concerned about putting all the engine-monitoring eggs in one basket, but the VM1000 has yet to so much as hiccup. As a payback, the system can keep tabs on the various vital signs and provide the pilot a useful backup to watching the needles (or digits, as the case may be). Should any of the readings go off scale, the VM1000 will alert you in no uncertain terms and clearly annunciate what's wrong. It's a real asset when you're flying by yourself in demanding weather.



We've retained the standard 201 ram-air ducting—seen below the spinner—and added a LoPresti Boom Beam. The ultrabright, high-intensity discharge landing light has a pencil beam; a wider-beam model is now available.

So far, we've had little help from an autopilot. We opted for the new Century Triden setup on the grounds that its 3ATI-sized controller would give us valuable radio-rack space. Turns out we could have squeezed a Century 2000 into the

After a brief stay in Maryland for the holidays, this spectacular Mooney could be heading to your airport. Be on the lookout.

right stack, but it would have been like a dozen fraternity brothers stuffed into a Volkswagen Beetle. As we went to press, Century was still waiting for the final certification of the autopilot and hopes are high that the Mooney will make a stop in Mineral Wells, Texas, before the end of the year.

Ultimately, we still got big portions of what we wanted in order to make the Millennium Mooney a demonstrator of technology, circa 2000. It remains an efficient, sleek airplane that's made all that much better by a first-rate stack of radios, a sturdy and easy-to-run engine, and detail improvements that make the airplane safer, more useful, and huge fun to fly. Even a horologist would understand that. □

Links to additional information on the Millennium Mooney may be found on AOPA Online (www.aopa.org/pilot/ links/shtml).