The Oshkosh debut

It's the panel that makes the plane

BY THOMAS A. HORNE

Visitors to AOPA's Big Yellow Tent didn't wait for EAA AirVenture Oshkosh's official opening at 9 a.m. on Monday of the event. No sir, they started swarming over AOPA's 2006 sweepstakes airplane—a 1967 Piper Cherokee Six 260—a full hour earlier.

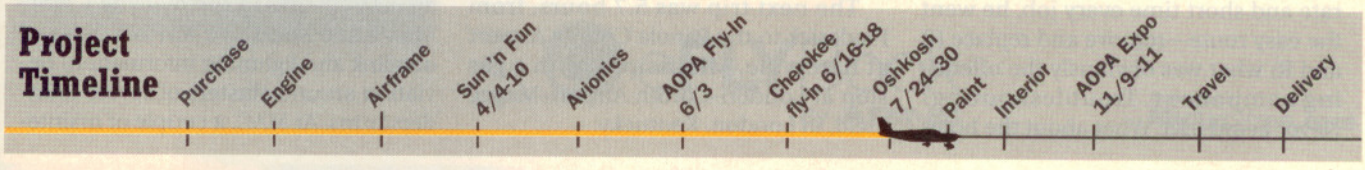
Although all the improvements to date make the Win a Six a show-stopper, the panel stole the show.

Muncie Aviation Co. (MAC) did a great job transforming our rather tired Six's panel into an exemplar of modern panel technology, thanks to skilled technicians like Morris "Mo" Willauer and technician-test pilot Ken Talhelm. Of course, there were others working on the panel during its total seven-week stay at MAC's shop at the Delaware County-Johnson Field in Muncie, Indiana. Like avionics shop Manager Bill Roundtree, of course, and the rest of his crew—Brian Manship, Micah Himelick, Jason Adams, and Mike Brown. Patient experts all, and ones who went the extra mile. Steve Larrimore's airframe maintenance crew also did a great job.

Here's an example. The Six's battery box and ground power plug were always troublesome areas. The box was full of mysterious holes, and loose wires surrounded it. The ground power plug? Like virtually every other Piper of this vintage, the spring on the cover of our Six's ground power plug was broken, and the plug itself just plain didn't work. Sure, you could plug in a power cart, but any incoming electricity never went beyond the ground power receptacle.

So when the airplane's first post-engine-overhaul battery died during the Sun 'n Fun Fly-In in Lakeland, Florida, back in April, a local mechanic simply yanked it out and installed a new one. He tried to charge it via the plug, even though I told him it didn't work. And he surely saw the holes and wires ("what the hell is this?" I recall him saying). But yes, the new battery started the engine, and kept on working. For a while. Until it, too, seemed to have given up the ghost during a pre-test-flight start at Muncie. What in the world was going on here?

That's when Talhelm discovered the skinned magneto wires. The wires had been forced through a too-small hole in the firewall, causing them to be stripped of their insulation. Result: The wires grounded, and the engine wouldn't start. A light bulb went on in everybody's head: If the wires had grounded in flight, both mags would have failed, and there would have been a forced landing. For me, it was a moment of special revelation: It could have been me! I had just



PHOTOGRAPHY BY MIKE FIZER

The core of the Win a Six's communications and navigation avionics. Top to bottom and left to right, is a PS Engineering PMA8000 audio panel; a Garmin GNS 530 and 430 GPS/nav/com package; a Garmin GTX 327 transponder; an Avidyne EX500 multifunction display; and a PS Engineering PAV80 AM/FM radio/CD and DVD player. Note how the Heads Up Technologies satellite receiver plots Nexrad returns on the EX500.

flown the airplane from Sun 'n Fun to Muncie—a three-leg-long cross-country that included a respectable jaunt across the Great Smoky Mountains. I'm giving myself a new title: test pilot.

But there was more. "Hey, these aren't Teflon-coated wires," Talhelm remarked. "They look like vinyl-coated automotive wiring." Bad news, because the heat of the engine compartment can melt vinyl-clad wiring. Roundtree ordered the old wiring ripped out and replaced with the aviation-standard Teflon variety. Now we all feel a lot better.

Then Willauer went waist deep in the forward baggage compartment while installing a new Concorde aviation battery. (The battery is under the forward baggage compartment's floorboard.) "No wonder the ground power plug doesn't work!" Willauer exclaimed. "Its wires aren't hooked up to the battery!" Then, "...Look, these holes in the battery box are burned at the edges! Someone tried to hook up those wires and they arced and shorted out on the box!" Then, "...Here's a relay. I wonder if it works. I better get the wiring diagram."

It's this kind of diligence that distinguishes MAC from so many other shops. That guy in Lakeland was, to use the mechanic lexicon, an "R and R" man. Like a robot programmed to flat rate and short time every job, he went the easy route—remove and replace (R and R) what was obviously the offending component. Troubleshooting? Never heard of it! What about the holes in the battery box, and the wires that were plainly meant to be routed through them? No time to check them out! Check the wiring diagram? Get real! At Muncie the technicians have good attitudes, the service manuals, the wiring diagrams, and more. Although MAC is a Piper Aircraft and EADS Socata dealer, the company works on practically all types of airplanes, and word about the quality of its work gets around.

Travel log

Since the panel makeover, I've logged 13.7 hours in the Win a Six. I'm comfortable with all the avionics, and pretty much spoiled by all that functionality. It makes instrument flying a breeze—something I discovered on my first flight from Muncie with the new gear. That was a 2.9-hour flight on May 31, from Muncie to AOPA's home base at the Frederick Municipal Airport in Maryland for the AOPA Fly-In and Open House on June 3. The airplane drew crowds of pilots and other gawkers, all eager to check out the panel and the speed mods from LoPresti Speed Merchants. LoPresti's new cowl, with its large access doors, also gives a good view of the Six's 260-horsepower Lycoming O-540 engine, overhauled to a fare-thee-well by Ultimate Engines, of Mena, Arkansas.

The next trip was 5.7 hours, from Frederick to the Panola County Airport at Batesville, Mississippi, with a gas stop at London-Corbin Airport-Magee Field, in London, Kentucky.

Panola County is home to Aircraft Interiors of Memphis, the interior shop that will be upgrading the Win a Six's somewhat tattered, dated cabin furnishings. Jimmy Jones, president of Aircraft Interiors, wanted the Six to stop by so its interior sidewalls could be removed in preparation for re-covering. He has already re-covered the airplane's two aft seats in gray leather with yellow accent piping, and these two seats have been traveling with the airplane. By the time you read this, the interior renovation—sidewalls, PS Engineering DVD screens, headliner, seats, and carpet—will be well under way. This also will include a custom center console from Saircorp/Flight Boss, of Wayne County Airport in Smithville, Ohio. The console will have all the options: clipboard desk, emergency lighting, oxygen tank holder, hinged armrest, and more.

After the stop at Aircraft Interiors, it was time for a 2.4-hour flight to show the airplane off at the Cherokee National Fly-In & Convention at the Grand Glaize-Osage Beach Airport in Missouri. There the fly-in's 250-some attendees had a chance to scope out the new panel, the engine overhaul, and the LoPresti cowl and wheelpants.

After the fly-in, it was a 2.7-hour return flight to Muncie. One that featured an easy (thanks to the Avidyne FlightMax EX500 and the XM WX Nexrad datalink and lightning information) deviation around clusters of severe thunderstorms. At MAC, a couple of mainte-

nance issues needed to be addressed. One involved repairing the pitch trim indicator—another part that seems to break on every older Piper airplane. Another was to re-rig the flap handle's ratchet. On a number of approaches to land, the flap handle's pawl disengaged. When that happens, the flap handle slams down to the next lowest setting, and the flaps immediately retract. When you're close to the ground, that's not a desirable feature. But Larrimore's crew at MAC fixed the problem.

Avionics in action

Although the Win a Six's panel is loaded with the latest in avionics, it's also user-friendly. Much of the equipment works passively, like the EX500, where XM WX datalink weather is always running in the background. Nexrad radar imagery—together with lightning—is always plotted, and so is any nearby traffic. Avidyne's TAS600 traffic advisory system plots the relative bearing and altitude of aircraft within seven miles horizontally and 3,500 feet vertically. Target symbols are plotted on the EX500, and on the ship's Garmin GNS 530 and the Sandel SN3500 electronic horizontal situation indicator (EHSI).

As targets first appear at longer ranges, they show up as open diamonds, along with numerical abbreviations for their relative altitudes (i.e., a "+05" means the traffic is 500 feet above you; a "-02" means 200 feet below your altitude; and a "00" means it's at the same altitude). As the traffic comes nearer, the open diamond becomes a shaded diamond. When it gets within two nautical miles, the symbol becomes a traffic alert, and a yellow circle is displayed. And as if that isn't enough, there's also a voice annunciation when traffic comes within two nautical miles. For example, "Traffic! One o'clock! High! Two miles!" If you miss seeing a target in this airplane, you'd better have your vision and hearing checked. By the way, the TAS600 is compatible with Garmin 530/430s, G1000s, and AT MX20s; Chelton FlightLogic; Meggitt MAGIC; and Honeywell KMD 550 and 850 equipment, to name but a few displays.

The Sandel EHSI and Meggitt/S-Tec System Fifty Five X autopilot and flight control system also have proven their worth in spades. I have been setting up the Sandel to show GPS as the primary nav source in en route flight, and then use the Sandel's secondary nav pointers for relative bearings to nearby VORs for additional position-fixing information. The Sandel also can be programmed to display airports, airspace, lightning, and Nexrad weather, but we have enough weather information via the Garmin 530 and EX500 displays. I usually program the Sandel to show just traffic, but when prohibited areas, restricted areas, and other airspace become factors, I'll punch that up as well. It's a great system.

Sandel SN3500 can display a course arrow plus two bearing pointers. The "NAV" button selects the primary navigation source. "VUE" is for selecting HSI or arc views. Two targets from the Avidyne TAS600 traffic advisory system are plotted. One is 300 feet above our altitude, another, 1,700 feet above.

J.P. Instruments EDM-930 replaces all the original Piper engine gauges. It also includes a fuel totalizer function. Any exceedances trigger alarms to a remote display, located above the attitude indicator. Here we see the red "OP" (low oil pressure) alert, because the engine is shut down.

The Fifty Five X has roll steering, which means that as you cross a fix, the Sandel's course pointer changes to the next leg of a flight-planned route, and the autopilot steers accordingly. The altitude preselect is another plus. Dial in your desired altitude on the panel's altitude selector, hit the autopilot controller's ALT and VS buttons simultaneously, select a rate of climb or descent with the controller's rotary knob, and off you go. Voice call-outs announce 1,000 and 200 feet until altitude intercept. When altitude capture comes, it's smooth and accurate. Talhelm tweaked the Fifty Five X so that it's never more than 20 feet off a captured selected altitude.

ILS approaches with the Sandel/Fifty Five X setup are a snap. With the Fifty Five X set on APR (approach) mode, a decision height set in the altitude preselector, and a localizer displayed on the Sandel, you've got a lot going for you. It's capability and safety galore, not to mention excellent situational awareness—what with the datalink weather (you can check on late-breaking METARs as you get close to the destination, as well as display any relevant Nexrad imagery), the traffic information, and the pseudo-TAWS terrain advisories on the Garmin 530.

What a great panel! It's the best equipped of any sweepstakes airplane we've ever done. And I haven't even mentioned the J.P. Instruments EDM-930 engine gauge/engine advisory/fuel totalizer display or the many other components in this airplane's front office. We'll save that discussion for another update. In the meantime, visit the Win a Six's Web site (www.aopa.org/sweeps) for updates, photos, and videos. There are two more work packages to go in this project—paint and interior—so follow along. AOPA

E-mail the author at tom.horne@aopa.org.

i Links to additional information about AOPA's Win a Six in '06 Sweepstakes may be found on AOPA Online (www.aopa.org/sweeps).