

# The big XC

The Commander is piloted three-quarters of the way across the country

BY STEVEN W. ELLS

**B**y 3 p.m. Monday, April 18, “The Claw” airplane anchors had been pulled out of the sandy Lakeland, Florida, soil and Rockwell Commander N112WN had been taxied across the field to get a fresh fill of Exxon Elite multigrade oil and a new Tempest oil filter installed. The



only evidence that the AOPA 2005 Commander Countdown Sweepstakes airplane had been a magnet for countless AOPA members' attention were an airplane-shape outline in the grass in front of the big yellow AOPA tent and a

story of a long cross-country flight in the Commander.

This cross-country flight from Arizona to Florida underscored the pleasant half of that hoary aviation maxim that describes flying as long

periods of boredom occasionally interrupted by moments of stark terror. The craftsmen who had built and installed the engine, propeller, interior, and avionics in this airplane had eliminated the terror factor—after more



## AOPASWEEPSTAKES



Wickenburg, Arizona, provided a scenic locale for AOPA Pilot Senior Photographer Mike Fizer to take the first "beauty shots" of the AOPA 2005 Commander Countdown Sweepstakes airplane (previous page, top and right).



than 15 flight hours the number of squawks was so low that they could have been written on the palm of a very young child's hand. Here's the story of the 1,762-nautical mile, five-leg journey from Wickenburg, Arizona, to Lakeland, Florida. But first, let's talk engines.

### Lycoming's new roller tappets

Lycoming's four-cylinder IO-360-series engines are known at airports around the world for their dependability and performance. The combination of the inherent balance of four opposed cylinders, the toughness of Lycoming's new cylinders with their super-hard "nitrided" cylinder

wall treatment, and the engine's willingness to start up and keep churning out power seemingly without regard to ambient conditions or pilot management skills makes the IO-360 engine the choice of many general aviation (and home-built) airplane manufacturers. This engine is so successful that two other manufacturers are close to certifying their versions of the Lycoming 360. No other engine is as highly regarded.

There are two versions of the Lycoming 360. The first version—known as the *parallel valve version*—puts out 180 horsepower and is installed in Piper Comanches, Lark Commanders, Mooneys, and others. The higher-output version

that is installed in the 2005 sweepstakes Commander is the 200-horsepower "angle valve" version. The Commander engine is equipped with Precision Air-motive (formerly Bendix) RSA-5 throttle body type fuel-injection system that eliminates the possibility of carburetor throat icing and more evenly delivers fuel to the cylinders. The engine started so readily, used so little oil (one quart every 11 hours), ran so cool (exhaust gas temperatures averaged around 1,450 degrees Fahrenheit with cylinder head temperatures between 320 and 340 degrees at 60- to 62-percent power and fuel flows of 9.5 gph), and metered fuel so well (EGT splits were no greater than 40 degrees) that I immediately started scheming on ways to install one in my Comanche, but that's another story.

One of the features of this engine—a feature that Lycoming officially announced at Sun 'n Fun EAA Fly-In 2005—is a set of roller tappets (often called *lifters*). These tappets incorporate a small wheel that bears against the camshaft lobes to transfer the camshaft valve lift and valve timing profile to the valves in place of the traditional solid-type lifters. According to Lycoming, this change will lessen camshaft friction and increase horsepower. The introduction of the roller tappets is the first of a series of phased technological improvements that Lycoming will be implementing into Lycoming engines.

If smoothness and performance of the IO-360 in the sweepstakes Commander can be considered as early indicators of the effectiveness of Lycoming's plans for future improvements, the company is on its way.

### **That pretty propeller**

In keeping with AOPA's mission of rejuvenating and improving sweepstakes airplanes, a Hartzell Top Prop three-blade propeller conversion was installed in place of the original two-blade prop. Hartzell Top Prop conversions—which are marked by their low-maintenance compact hub design coupled with a blended scimitar-blade shape that improves performance—have been developed over the past decade for many light airplanes.

The space-age blade design and the large factory-chromed spinner look good. And it performs well, too. Within a few minutes after lifting off on the test flight, all concerns about vibration were left behind. The factory-rebuilt Lycoming engine—supported in

the mount by a new set of vibration isolators from Barry Controls Aerospace—swinging the three-blade Hartzell provided steady, smooth power from the first start.

Since AOPA members voted online to approve the paint scheme that turned the sweepstakes Commander from a faded ramp mongrel into one of the most visually arresting AOPA sweepstakes airplanes ever, it was only fitting that the propeller get the treatment too. American Propeller Service, of Redding, California, applied the same paint colors that grace the airframe to each blade of the propeller through an FAA-approved process it calls the Designer Prop. The result is really neat—a perfect-matching paint job that caused one AOPA member to comment that a Designer Prop is the airplane equivalent of custom wheels for cars. The wheels and the Designer Prop treatment aren't really necessary but both add a lot to the appearance of the vehicle.

We were finally set to launch on our long cross-country to Sun 'n Fun. The only goal we didn't meet was the interior—there just wasn't time to finish it, but the seats were done and they provided good support and were comfortable throughout the trip. The avionics were glowing, the engine-prop combination was purring, and the weather was good all the way to Florida. But first, it was Fizer time.

### **Oh-dark-thirty**

The paint job by Master Aircraft Painters looked great as *AOPA Pilot* photographer Mike Fizer shot frame after frame of the Commander in the quiet Arizona desert light late Friday afternoon, April 8. Nearby, I was chewing my fingernails, Popsicle sticks, and Wrigley's finest—there was one more hurdle to jump before the strenuous three-month push to Sun 'n Fun was finished. That hurdle was twofold—conduct a thorough pre-flight and test hop ASAP, and get the Commander three-quarters of the way across the United States for its first command appearance at Sun 'n Fun. Chelton Flight Systems chief pilot Nick Cain had volunteered to hold down the right seat during the big XC. The test hop went well and the tanks were filled to the tabs. The plan was to fly three-hour legs for two reasons—we wanted to visually check the airplane for discrepancies at regular intervals and neither of us felt like straining our physiological capabilities.



We launched on Saturday morning at 5:25 on a 348-nm leg to El Paso, Texas. We set off on a southeasterly course, cleared the Class B airspace at Phoenix, and angled toward El Paso International Airport. This route kept us from having to climb above 9,500 feet msl to clear mountains. Two hours and 51 minutes later we rounded the southern end of the Franklin Mountains and descended to Runway 26L. The airplane was running beautifully. We added 24.3 gallons of 100LL and launched—next stop was 342 miles east at Abilene, Texas. We caught a tailwind and made it in two hours and 30 minutes—just in time for lunch, which consisted of popcorn we found at the Abilene Aero pilots lounge, supplemented with apples from the groceries we had purchased the night before in Wickenburg. The winds from Wickenburg to Abilene were brisk—probably 30 knots at 9,000 feet and blowing from the southwest. We experienced a few minutes of lumpy air but nothing that was anything more than unpleasant. Visibility was excellent.

The last leg on Saturday took us three hours. We landed at Alexandria International Airport in Alexandria, Louisiana, after flying eight hours and 21 minutes and covering 1,021 nm. We filled again to the tabs as we landed and put N112WN to bed by putting on

the canopy cover from Bruce's Custom Covers. It fit fine—I had sent a picture and filled out the custom-fitting instructions from Bruce's Custom Covers' Web site after the antennas were installed at Howard Aviation, and Bruce's completed the cover and sent it on to Master Aircraft Painters. We used it every night throughout the airshow to keep dust and dirt out of the cabin, and it was easy to use and looked good. It took 78 gallons of fuel to fly that 1,021 miles on Saturday, and the fuel cost averaged \$3.45 a gallon.

### The last leg to Lakeland

Lakeland was only 616 miles away so we slept in a little and launched at 8:35 a.m. local time. Next stop was scheduled to be Tallahassee, Florida, but the winds didn't cooperate so we modified the plan. The Commander is equipped with two fuel-consumption programs—one is part of Chelton's Flight-Logic Synthetic Vision EFIS (electronic flight information system) and one is part of J.P. Instruments' EDM-800 system. After each fuel fill we took a minute to enter the fuel aboard in the two systems—then at anytime during that leg both fuel computers instantly provided information on our fuel consumption in gallons per hour, gallons used, gallons remaining, gallons (and time) required to the next waypoint,



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**i** Links to additional information about the AOPA sweepstakes may be found on AOPA Online ([www.aopa.org/pilot/links.shtml](http://www.aopa.org/pilot/links.shtml)).

and gallons (and time) to empty tanks. That made it easy to keep track of our personal one-half-hour minimum fuel limitation.

In this case, we landed at Bob Sikes Airport in Crestview, Florida, three hours after takeoff. We bought 29 gallons of fuel (\$3.20 per gallon) for the final push into Lakeland.

There was a scattered layer at 4,500 feet over Florida from Center City VOR south. We followed the Sun 'n Fun notam landing procedure and by 3 p.m. the Commander was tied down on the AOPA site.

The airplane had performed beautifully and all the equipment seemed faultless. Cain wiled away the cross-country hours by investigating every function of every piece of equipment in the airplane.

After he finished coaching me on the many features of the Chelton Flight-Logic system, he soon knew all about the panel-mounted model 552 carbon-monoxide detector from CO Guardian. This handy device dovetails perfectly with the other high-tech gadgets installed on the Commander and fits in a standard 2-1/4-inch instrument hole. The 552 toggles between instantaneous readouts of the in-cabin levels of that silent and deadly killer—carbon monoxide—as well as providing readouts in pressure altitude, Zulu and local

time, cabin altitude, cabin and outside air temperature, and battery voltage.

Cain also activated the Sirius Satellite Radio receiver that's built into the PS Engineering PMA8000SR audio panel. The music, talk, sports, and traffic stations were in stereo—soon we had found the station of the day and were finger popping along over East Texas at 5,500 feet.

The tunes sent down from above were easily enhanced to conform to individual tastes because of the fine-tuning controls on the Lightspeed Thirty 3G headsets that come with the airplane. These headsets are very comfortable, can be worn for hours without the dreaded “C-clamp around my brain” agony, and with 28- to 30 dB of active sound attenuation, completely do away with the after-flight ear ringing that used to be an unwelcome legacy of every long day of flying. Each headset was equipped with bass and treble boost controls and a personal side-tone equalizer that enable the wearer to tune the inputs to personal preferences.

### **What's next?**

There are still items on the checklist—a turbonormalizer installation from RCM Normalizing and the installation of Chelton's new AP-3C digital autopilot. On a lesser scale but still very important is the installation of a pair of Globe Fiberglass wing tips that are equipped with Whelen recognition lights. The recognition lights don't draw much power, but they point forward like landing lights and will be turned on and off, or pulsed in flight by Precise Flight's Pulselite module.

Research has shown that the human eye is many times more likely to pick up the pulsing lights than it is to lock onto a steady light. In low visibility or hazy flight conditions these tips will increase safety tenfold. Globe replacement elevator tips and a low-drag dorsal fin have already been installed. Companies such as Globe that continue to support older airplanes are the only reason that the Commander Countdown sweepstakes aircraft was able to progress so far so fast.

The sweepstakes Commander will be at the AOPA Fly-In and Open House on June 4. Stop by and take a look at what could be your next airplane. **AOPA**

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