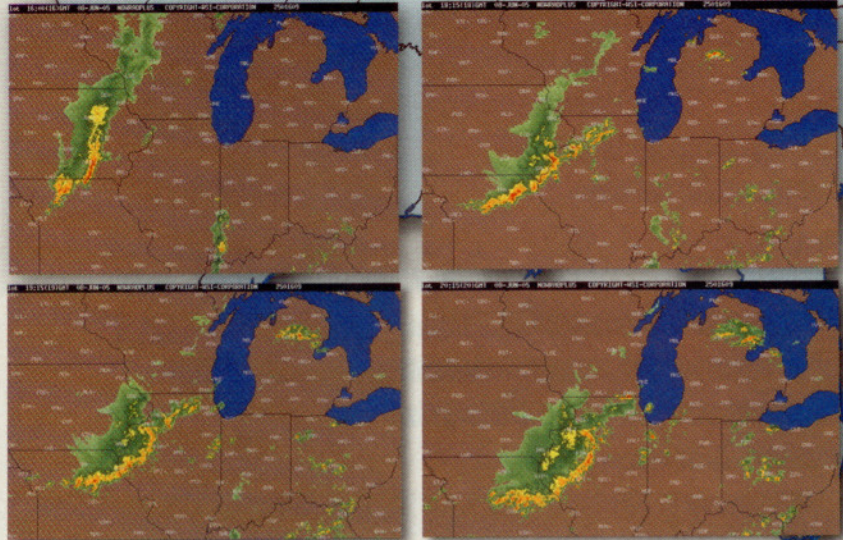


The Big XC II: The Wx solution

Help out of harm's way BY STEVEN W. ELLS

In early June, I flew the AOPA 2005 sweepstakes airplane, a Rockwell Commander 112A, cross country from AOPA's headquarters in Frederick, Maryland, to Big Piney, Wyoming. The mission: Deliver the Commander to Big Piney Aviation and RCM Normalizing for a turbo normalizer installation. The route took me across America's midsection during the early summer months and made for a demanding flight in terms of routing and distances flown each day.

One large storm system blocked the way west, while a second, more widely scattered cluster of thunder-bumpers required a course diversion. Fortunately, the Commander is equipped with WSI's InFlight in-cabin datalink weather that's displayed on a Garmin MX20 multifunction display (MFD).



On hand for AOPA's Fly-In and Open House, the Commander left Frederick on June 6 for the long flight across the country to Big Piney, Wyoming. However the flight didn't follow the original flight plan because of the presence of two cold fronts. The radar images show the first and strongest front as it approached Peoria. The in-cabin WSI datalink weather picture convinced the author to land and seek shelter in Peoria.

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Day 1 was good, then scary

The tanks were filled with fuel—68 gallons usable—before launching at 7:11 a.m. to a cruising altitude of 6,500 feet msl. After an uneventful 394-nm flight, the Commander touched down at Wabash Municipal in Indiana, so that Jim Rhoads of Flight 1 Aviation Technologies could get some data to facilitate the final development of his company's exclusive Commander flight simulation software. This software will run on newer versions of Microsoft Flight Simulator. What's unique about this software is that it mirrors the cabin of AOPA's Commander. The instrument panel features the Chelton FlightLogic primary flight display (PFD) and navigation display (ND), the Garmin MX20 MFD, the two Garmin SL30 nav/coms and the Garmin GTX-327 transponder, the CO Guardian 552 multifunction carbon-monoxide detector, and the PS Engineering PMA8000-SR, with its 130 channels of Sirius satellite radio, the Aero Trim aileron trim control, and the Chelton AP-3C digital autopilot. In the near future a free download of the software will be available on AOPA Online.

The tanks were again topped off, and the Commander lifted off at 12:52 p.m. local time and headed toward Omaha. Mother Nature had other plans. About an hour west of Wabash, a wide area of strong convective activity had formed a wall of weather that ranged from Chicago southeastward across much of Illinois and on into Missouri. This wall of nasty red and yellow, produced by a Midwestern-plains cold front, was more than 220 miles long and 30 miles wide, and lay directly across the path to Omaha. If the Commander hadn't been equipped with WSI's InFlight datalink weather system, we could have flown into harm's way before landing at Peoria, Illinois, where the Commander was wheeled into the shelter of a Byerly Aviation hangar (see "Wx Watch: Radar Revolution," page 167). This decision to land and seek shelter was based on looking at the WSI display—the NOWrad radar mosaic is never more than five minutes old—on the in-cabin full-color screen of the MX20. There was no need to go through the struggle of attempting to decipher where the stations described by the sigmet lay in relation to the flight path. Within an hour after securing the Commander, low black clouds and wind gusts, followed by a flooding

downpour, swept across the airport at Peoria. That was enough for day one.

Day 2 brings another cold front

The plan for day two was to fly to Des Moines to meet with Steve Petrich of P2 Inc. The Commander is equipped with two P2 products—a landing-gear-down and overspeed warning system and Time Trac flight recordkeeping system. Time Trac is a hardware/software package that records takeoff and landing locations, times, and times en route. This data is downloaded into a program for conversion into pilot and maintenance records. The data can be used for flight-time logs for up to 100 pilots as well as tracking time in service for up to 100 airplanes. Petrich needed to obtain an in-flight data download, so we met at Des Moines and flew one circuit around the airport.

Before taking off, the first quart of Exxon Elite oil was added to the Lycoming factory-overhauled IO-360 engine in 19 hours of flying. The dipstick showed six quarts—down from the eight-quart fill during the change from the noncompounded break-in oil at Lakeland, Florida. In addition to excellent oil consumption, the Lycoming engine has impressed everyone with its smoothness.

For the rest of the day, some hefty buildups dictated a northwestward flight path past Sioux City, Iowa, before turning southwest in the hopes of reaching the airport at North Platte, Nebraska. One of the WSI InFlight features that helps pilots to dodge buildups is called *echo tops*, which displays the location of tops of the severe weather buildups, what altitude the tops have built to, and the direction of cell movement. In addition to echo tops, the WSI NOWrad weather mosaic closely resembles the green, yellow, and red patterns that march across your local weatherman's screen every night, except that the WSI mosaic has been run past the experts on staff at WSI to upgrade its quality. METARs, TAFs, sigmets, and airmets also are easy to access.

In addition, the opening page displays various colored symbols at airports. This information helps the pilot quickly determine flight conditions—VFR, IFR, MVFR (marginal VFR)—at airports along a route. The availability of up-to-date weather data in the cockpit almost eliminates the time-consuming chore of going off frequency to contact flight watch for weather information. It's an amazing tool.

The Commander never made it to North Platte that day. Moisture flowing in

The Commander at the Fly-In

The interior experts at Air Mod worked furiously to apply the finishing touches and had transformed the all-plastic interior (which featured all-new plastic interior parts from Vantage Plane Plastics) into a softer, more inviting, and quieter space. Air Mod completed the job seven hours before sunset the day before the airplane was due to be the star of the fifteenth annual AOPA Fly-In and Open House in Frederick.

Instrument meteorological conditions early on the morning of the fly-in threatened to put a kink in the Commander's arrival schedule and a damper on the event. But Mother Nature cooperated, and the Commander arrived to find a legion of admirers waiting eagerly to get a look at AOPA's 2005 sweepstakes airplane as it taxied into its designated spot in the display area.

The feeling seems to be universal—based on members' comments both at Sun 'n Fun and the fly-in—the Commander is a very popular sweepstakes airplane. And why not? The design is pleasing to the eye, the visibility is superb, and the cabin is roomy and well ventilated. Unfortunately, Commander 112s are "conservative" cruisers—a nice way to say that they are a bit slow with true airspeeds that peak out at about 130 knots.

Fortunately, there's a remedy for this, and it's tried-and-true. AOPA's Commander departed Frederick on Wednesday for the Big XC II—a 1,500-nm trip to the mountainous lands of western Wyoming—for the turbonormalizer installation. By the time you read this, the transformation will be complete.

behind the cold front and the saturated ground created very low ceilings. As a result, the night was spent at the little town of Thedford, Nebraska. With the airplane snuggled up in its Bruce's custom canopy cover and securely tied down, the only concern was that a super cell would dump hail on the Commander during the night. Thankfully, there was no thunder

that night—only the sounds of train whistles as they moved north through town.

Day 3 and on into Big Piney

The low ceilings prevailed well into the early hours of day three. Just after 1 p.m. local time, the set of Michelin tires that tracked straight and true on every landing and takeoff left the newly sealed surface

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of Thedford's Thomas County Airport's Runway 11, and the Commander again headed west.

Never having flown from east to west into Wyoming, before departure a call was made to Robin Miley, the owner of Big Piney Aviation and RCM Normalizing, for advice. Miley said that the locals fly to Cheyenne and then stay north of Highway 80 to keep out of the high mountains when they travel to Big Piney from the east. This advice kept us out of trouble as the route westward was flown in good visibility conditions under a 1,500-foot-agl cloud deck from the Cheyenne area to 10 miles east of the Medicine Bow VOR. There the overcast gave way to scattered cumulus at 11,500 feet.

The terrain across Nebraska had been gradually rising—in the 452 miles from Omaha in the easternmost part of the state to Scottsbluff in the westernmost part of the state, airport elevations had risen 2,910 feet. But as the mountains of the Great Divide began to fill the wind-shield of the Commander, the rate increased. In the 70 miles between Scottsbluff and Cheyenne, the ground jumped up an additional 2,200 feet. The airport altitude at Cheyenne is 6,165 feet msl. The Commander slogged on but clearly was not happy at the 10,500-foot cruise altitude required by the high terrain.

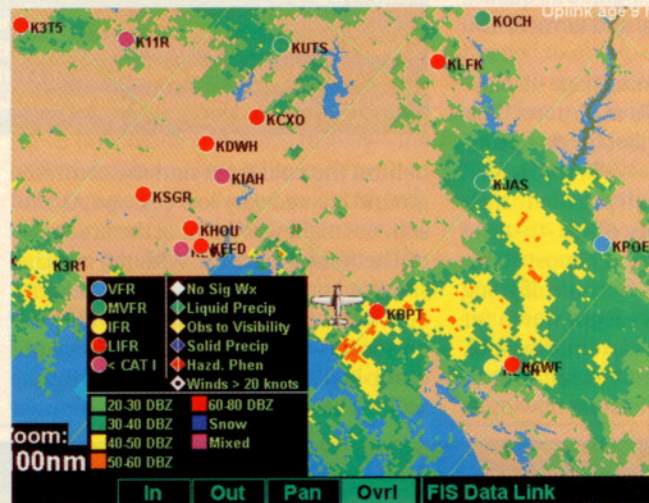
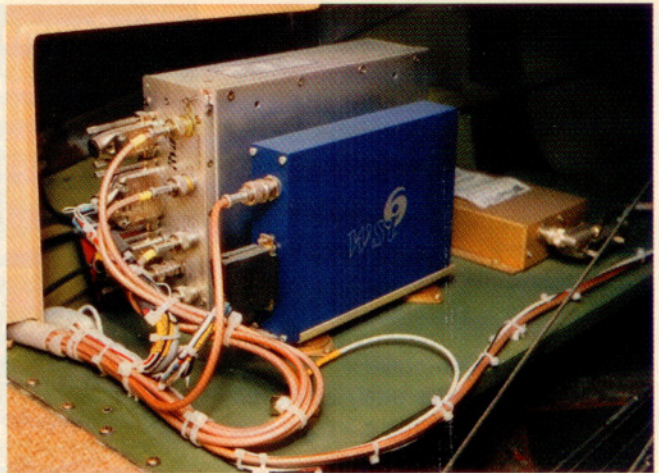
There was a lot to see under the scattered clouds of western Wyoming. Virga—rain that falls from the base of a cloud but never reaches the ground—was seen out the copilot's window over the southern end of the Wind River Range of mountains as we approached Big Piney-Marbleton Airport. Winds at Big Piney were 250 at 9. Touchdown on Runway 13 took place 15.5 flight hours after departing Frederick. The fuel burn for the trip fell right in line with a 10-gallon-per-hour consumption estimate—it took 158 gallons to make the trip.

Turbonormalizer surprise

Miley does it all at Big Piney. He runs the two companies, sells avgas and jet fuel, and plows snow in the winter. After buying his Commander 112 from a friend, Miley realized that while the airplane was solidly built and comfortable, it needed a performance boost to be a viable and safe Wyoming airplane.

In 1988, RCM Normalizing was granted a supplemental type certificate (STC) for the installation of a turbonor-

The WSI receiver unit is mounted on a shelf behind the baggage compartment bulkhead in the Commander (right). The Ryan 9900BX Traffic Advisory System receiver/processor, the Free Flight GPS receiver, and the ELT also are located on this shelf.



A typical WSI inflight page (left) shows airports identified with symbology depicting the present conditions—VFR, IFR, MIFR, and LIFR—as well as a color-coded NOWrad weather mosaic.

malizer system on Commanders. Since that day, Miley has sold 76 systems. The system is well engineered and comes with an intercooler that automatically reduces the temperature of the compressed air pumped into the engine. We'll write more on turbonormalizing later in the year. See AOPA Online for a white paper on turbonormalizing (www.aopa.org/pilot/bonanza/turbo_primer.html). Miley has been flying the original system on his Commander for almost 1,600 hours and has never experienced a lick of trouble in any part of the system or engine. That number is a tribute to the turbocharger and oil scavenge pump—components that continue to be made to the original quality standards by Kelly Aerospace—and to Miley's operating techniques.

He's a big believer in keeping temperatures down and insists on a five-minute idle on the ground to cool the turbonormalizer components before engine shutdown.

A 136-nm trip to Salt Lake City airport in Miley's turbonormalizer-equipped Commander 112 provided a

preview of what's in store for AOPA's Commander. Even with a headwind at 10,500 feet and a pretty conservative power setting of 26 inches and 2,400 rpm, Miley's Commander clicked off groundspeeds of 150 knots—a full 23 knots better than AOPA's Commander. Stand by for "go" power.

By the time you read this, the turbonormalizer will have been installed. AOPA's Commander will have been taken to Master Aircraft Painters in Wickensburg, Arizona, for some paint detailing and touch-up.

i Links to additional information about AOPA's Commander Countdown Sweepstakes may be found on AOPA Online (www.aopa.org/pilot/links.shtml).

Then we will set course on yet another long cross-country for the Commander to take its place in front of AOPA's big yellow tent during the week of July 25 through August 1 at EAA AirVenture

Oshkosh 2005. See you there.

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