

MUCH better.

In my opinion, a three blade prop is smoother than a two blade on a pusher configuration. A two blade will produce a lot of vibration. On our type pusher aircraft, both blades are going through the wing turbulence at the same time; resultant thrust on the airframe is in pulses. A three blade has only one blade enduring wing turbulence at a time.

ED: see CSA, August 1996, page 13 for related prop noise article.

Wanted

I'm looking for an O-320 Long-EZ in excellent condition structurally, mechanically, and cosmetically. Updates preferred including Roncz canard and long rudders. Experienced responsible pilot willing to sign waiver of liability. Prefer purchase from original builder. Doug Prange 402-432-0774.

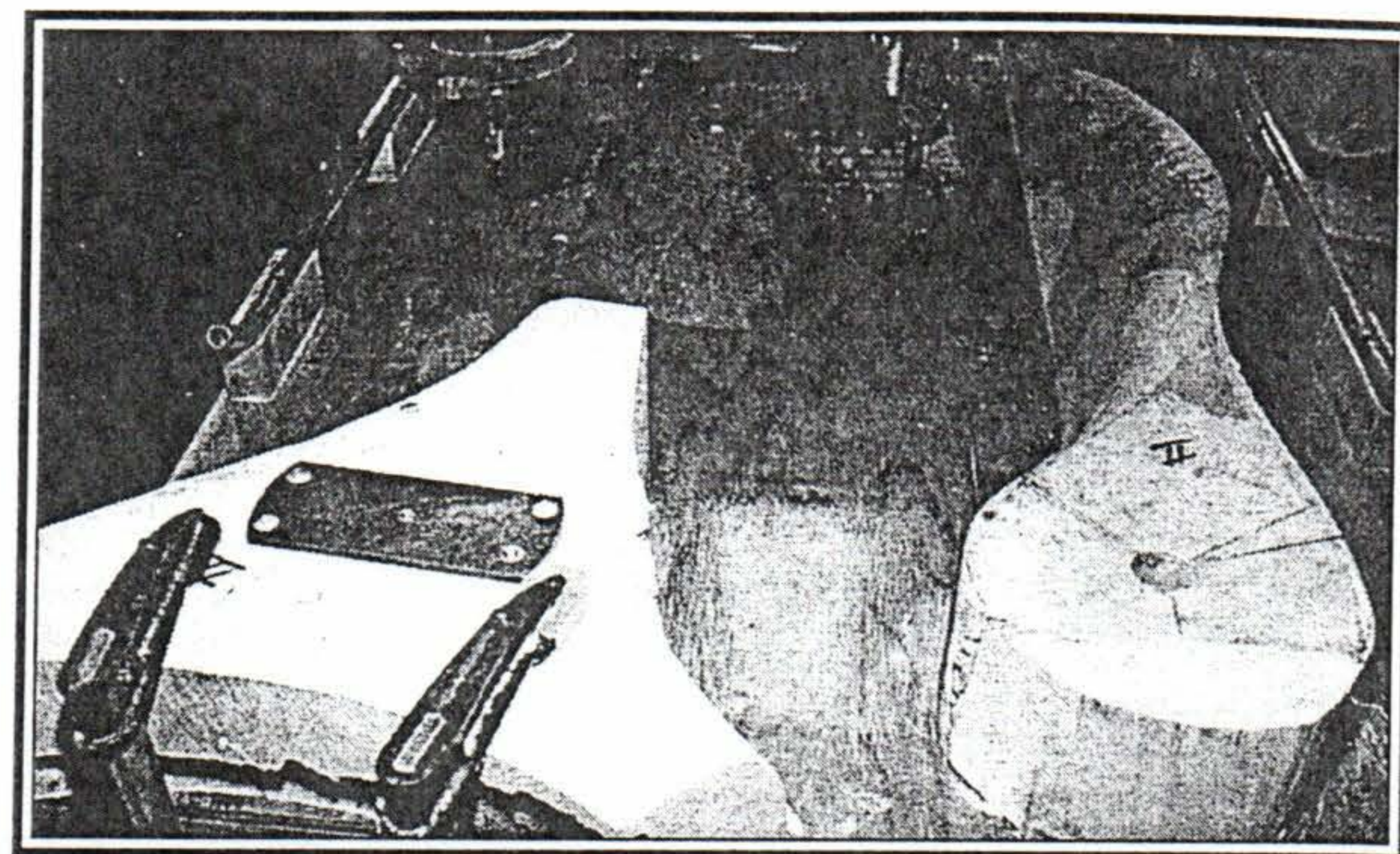
Caution: Laptop in the Cockpit

Tom Staggs (WA) - Think hard before you tear out those instruments. The FAA has made it clear they will NEVER certify any primary flight instrument that use a Windows operating system. The primary reason is not the system's propensity to fail when you need it most, but has to do with the accuracy of the software code.

When we in the avionics industry write code, especially for cockpit displays, we do validation and verification. The purpose is to ensure every line of code performs its intended function, there is no potential miscalculation and there are no "extra" lines of code.

Lack of validation and verification allowed that rocket to blow up recently when an "extra" line of code was accidentally left in its software.

Certified displays incorporate "watch-dog timers" that continually track time to perform functions and update the display. Should a function get stuck in an endless loop, the timer sends the display back to a reset mode. No



Pattern of blade face and hub during trials

laptop-based system has ever incorporated this function and can't with current processing power.

Given some of the brightest engineers and most detailed cross-checks, errors still occur. About a year ago, an airliner accidentally stalled in flight. As it pitched and rolled, the flat-panel displays sensed what they thought was a failure (excessive roll rates beyond the design capability of the aircraft) so they went into their reset mode... just when the pilots needed their artificial horizon the most. No display is infallible.

Consider also the weakest point in most display systems are the backlights. Your computer can work just fine, but when the backlight fails, the laptop becomes 3 pounds you could have used for fuel. Backlights in laptops are not designed to handle constant vibration of a small piston airplane. Even backlights that are designed to do so fail somewhere between 5 and 15,000 hours. That means if 100 of you had laptop-powered instrument panels, I would expect at least one in-flight failure per year of your display. One company who manufactures 95% of the world's aviation backlights won't guarantee their backlights beyond 5,000 hours in aviation applications.

Large planes that do fly with EFIS
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(Electronic Flight Instrument System) displays ALWAYS have a redundant, stand-alone backup for essential information; we just don't have that kind of room if you use a laptop.

The moral of this story: As Director of Cockpit displays for Allied-Signal Air Transport Avionics, I went to a lot of trouble and expense to install a vacuum-powered artificial horizon in my Long-EZ to replace a functioning electrical one. The vacuum pump has a low mean time between failures, but its failure will not likely be coincident with a total electrical failure.

Single-point failures (total electrical failure or software-induced display failures) are just too risky for a small plane like an EZ.

Alternate Canopy Supplier

David Orr (CA) - Steve Tillman (123A Butler Creek Rd, Sedro Wooley, WA 98284-9602, 360-724-3710) sent \$475 for a canopy from the Gordon Olson source I suggested in the last issue. He is getting the run around and hasn't seen the canopy yet. I advise others to check with Steve before ordering theirs. It might be a case of consolidating orders to build at one time or a fast scam.

Berend Ages 949-587-0614 has the same problem and reports Olson complains of financial problems.