



SWEEPSUPDATE

A MONTHLY UPDATE ON THE PROGRESS OF YOUR SWEEPSTAKES AIRPLANE



A Trilogy standby instrument makes the Let's Go Flying SR22 panel all glass. The airplane's mechanical back-up gauges (below) are gone for good.



Clear and compelling

All-electric standby unit banishes the last of the round dials

BY DAVE HIRSCHMAN

The logic behind L-3 Communications' Trilogy electronic standby instrument is clear and compelling.

When a glass-panel aircraft's primary flight display (PFD) goes dark, the Trilogy provides pilots with an all-in-one back-up instrument that looks and acts like a mini-PFD. It doesn't require pilots to make the mental leap from digital displays to analog, electro-mechanical "steam gauges" at an anxiety-producing moment, or call on pilots to instantly revive out-of-practice instrument scans that require reading and interpreting three gauges

(airspeed indicator, attitude indicator, and altimeter) at once. They can simply switch their focus to the all-in-one Trilogy and keep flying with precision and confidence.

"The Trilogy provides the same picture that glass-panel pilots are used to seeing, as well as solid-state reliability, in a smaller, lighter package," said Kim Stephenson, L-3's manager for aftermarket programs. "The Trilogy provides an identical presentation as a PFD at the time pilots need it most. It has the same airspeed and altitude tapes they're used to seeing, so pilots don't have to



After removing the mechanical standby gauges, avionics technician Ian Terry prepares to mount the Trilogy in their place. The Trilogy contains an internal AHRS and air data computer, and plugs into the same electrical, pitot, and static lines as the instruments it replaces. There's no need for new wires or probes.

go back to searching for needle movements on round dials."

The Trilogy ESI-1000 (the letters stand for "electronic standby instrument") was recently FAA certified to replace standby gauges in a long list of aircraft, and AOPA's Let's Go Flying Sweepstakes SR22 became one of the first to get the upgrade. The solid-state unit works normally throughout 360 degrees of pitch and roll, so it won't tumble in unusual attitudes.

Technicians at Landmark Aviation in Frederick, Maryland, removed the subpanel that held the original standby instruments and fabricated a replacement for the Trilogy and its 3.7-inch (diagonal) screen. The Trilogy has a built-in attitude and heading reference system (AHRS) and air data computer, so connecting it to the aircraft's 28-volt electrical system was a simple matter of attaching a cannon plug and connect-

ing pitot and static lines. (The Trilogy also can work in 14-volt systems with an external converter.)

After testing and calibrating the new unit, then setting up the airspeed tape to display the SR22's V-speeds (and accompanying green, white, yellow, and red color bars), the installation was complete. The Trilogy system was about two pounds lighter when installed than the instruments it replaced.

"The thing that took the most time, really, was waiting for the paint to dry," said Ian Terry, the Landmark avionics technician who performed the installation, fabricated the new subpanel, and

painted it to match the black interior. "The installation itself was completely straightforward."

Flying the Trilogy

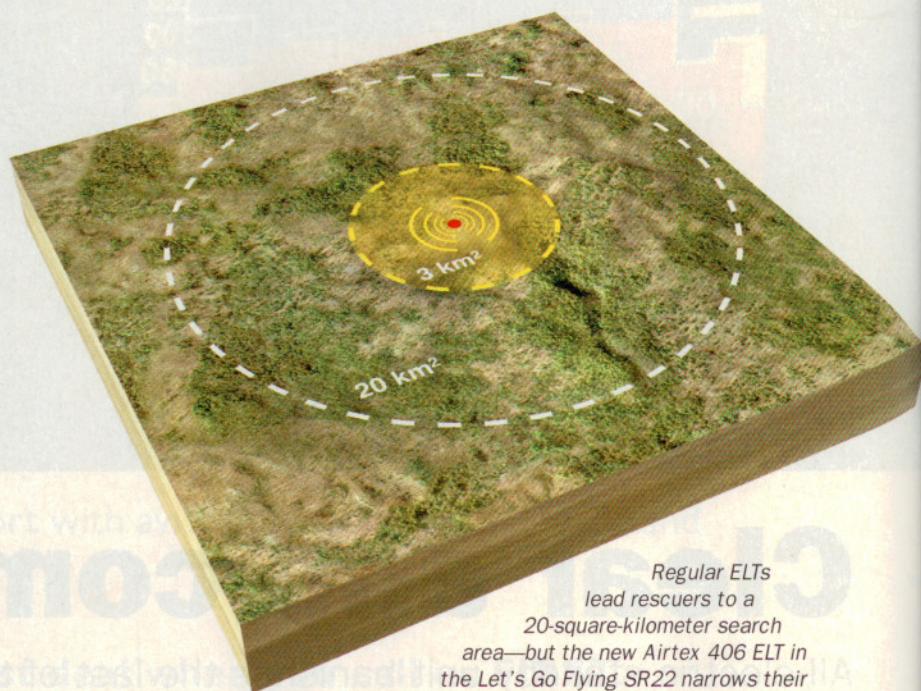
The Trilogy is linked to the essential bus in the SR22 and powers up immediately when the aircraft electrical power goes on. It takes less than three minutes for the Trilogy to align, less than the main Avidyne display.

There are just four buttons on the Trilogy (menu, select, plus, and minus) and setting the barometric pressure is a simple matter of hitting the plus or minus keys to get the desired value.

Avionics:

A powerful new safety feature

The Sweeps SR22's new Cobham ELT



Regular ELTs lead rescuers to a 20-square-kilometer search area—but the new Airtex 406 ELT in the Let's Go Flying SR22 narrows their hunt to just three square kilometers.

AOPA's Let's Go Flying Sweepstakes SR22 is sporting many improvements—but none have been as easy to install, or as potentially valuable to future occupants, as this.

Beneath its flashy exterior, the Let's Go Flying SR22 is now equipped with Cobham's Airtex ME406 ELT that, in the event of an accident, puts out an emergency signal more than 50 times as powerful as the old, but still legal, 121.5 MHz unit it replaced. Considering the fact that satellite

monitoring of the old frequency was halted on February 1, the new 406 MHz ELT will give the next owner peace of mind that rescuers will be able to pinpoint the airplane's location if a search is ever necessary.

The retrofit ELT and installation kit carry a retail price of \$998 and required less than three shop hours to install at Landmark Aviation in Frederick, Maryland.

A 121.5 MHz ELT allowed satellite tracking of an emergency signal to

During flight, the Trilogy performance data precisely matched the PFD in all respects. The Trilogy's horizon line was accurate during steep turns and aggressive course reversals, and L-3 officials say it can keep up with roll rates up to 100 degrees per second.

With the PFD dimmed to black and wearing a view-limiting device, controlling the aircraft solely by reference to the Trilogy was a simple matter.

The Trilogy can be purchased with or without a magnetometer to provide heading information. Without built-in heading information, turning to a particular heading requires scanning

within 20 square kilometers. A 406 MHz ELT reduced that area to three kilometers. And next month, when a new interface connects the new Artex ELT to one of the airplane's Garmin 430W GPS units, the accuracy will improve to a few hundred feet.

AOPA has worked hard to ensure aircraft owners aren't saddled with costly new regulations that would have required buying and installing new equipment. Aircraft owners can decide for themselves what's best for their airplanes based on where and how they fly and other equipment they carry.

But the Let's Go Flying SR22 has been known to travel over some distant, rugged, and remote territory, and it certainly has the ability to fly to Canada, Mexico, or the Bahamas where regulations requiring 406 MHz ELTs potentially could be enacted in the next few years.

AOPA's upgrades and additions to the already extremely capable Let's Go Flying SR22 (a 2005-model G2-GTS) have focused on safety. The airplane now has airbags for the front-seat occupants; a highly reliable, all-in-one Trilogy standby instrument by L-3; Forward Vision's EVS-100 infrared camera system for night flying; and WAAS vertical guidance for nonprecision approaches.

Now, the Let's Go Flying SR22 is among the estimated 18 percent of the U.S. general aviation fleet that has made the jump to 406 ELTs. To learn about real-world saves taking place around the world as a result of the improved ELT technology, visit the Web site (<http://searchandrescue.gsfc.nasa.gov/sarsatreports.html>).

—DH

the whiskey compass, too. In a Cirrus, that's easier said than done because it demands shifting one's eyes between the Trilogy on the lowest part of the sub-panel to the compass mounted above the windshield. It's a big, potentially vertigo-inducing head movement.

Of course, the old standby instruments don't provide heading information, either, and using them requires the same up-and-down head movements. Being able to avoid those disorienting head bobs is a significant advantage to upgrading to a Trilogy with its own magnetometer (a \$4,500 option).

One work-around that doesn't require neck twisting, or added expense, is stealing a glance at the multifunction display (MFD) or one of the Garmin 430Ws in the center of the panel. One GPS (and the S-Tec System Fifty Five X autopilot) is hooked to the essential bus, so theoretically, it should keep working in an emergency. Hand-flying the airplane with the Trilogy and following the magenta course line on the GPS isn't difficult.

The Trilogy doesn't have its own power source, but L-3 is planning to offer future versions with independent

batteries. The company will recommend self-powered versions for aircraft with single electrical systems. But aircraft like Cirrus with dual electric systems already have built-in redundancy, and L-3 says independent standby power isn't necessary for them.

Going to the trouble and expense (a new Trilogy retails for \$15,000) of upgrading to a new technology should provide new and enhanced capabilities—and L-3's Trilogy delivers with an exceptionally reliable, easy-to-read display and workload-reducing and safety enhancing options that can include built-in heading information and a standalone power source.

As gorgeous as the Trilogy is, some customers have asked about using it as a primary instrument. The clear, bright, easy-to-read display would look right at home in the front and

The move to glass panels made electro-mechanical gauges an endangered species. Trilogy could make them extinct.

center of any instrument panel (and customers have the ability to mount it just about anywhere in their normal field of view).

L-3 officials say getting the Trilogy certified as a primary instrument would increase costs, however, as would autopilot and navigation functions the company has considered. "We listen closely to our customers," Stephenson said, "and Trilogy will evolve with market demand."

And on the subject of market demand, here's a word to the wise: Expect the existing glut of used mechanical instruments to grow. The move to glass panels made electro-mechanical gauges an endangered species. Trilogy could make them extinct.

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