

Panel Annals

Part 4: The Big Reveal

By Tom Machum

Editor's note: The following is the fourth installment of an ongoing series chronicling a professional panel upgrade on a single-engine, legacy aircraft; in this case, the author's 1979 PA-28-236 Dakota.

The goal of this series is to provide a behind-the-scenes look at what the owner of any legacy GA aircraft – be it Pip-

er, Cessna, Beechcraft, Mooney or other – can expect when he or she decides to invest time and resources into a professional avionics upgrade.

Future installments will cover operation and reviews of the new equipment, as well as how the author and his plane partner, Paul, are addressing ADS-B (out and in) Enjoy!

Here we are. In just under three months – essentially the time estimate we were told going into this project – we now have a “new” old Dakota! So enough of this fooling around; here’s what we had done from spinner to tail:

- New Plane Power alternator by Hartzell*
- New voltage regulator*
- All new metal panel with silk screened text (regulation-required and custom)
- New, magnetic compass*
- New replacement glareshield*
- Garmin G5 to replace the vacuum standby horizon
- Garmin GTN650 WAAS GPS NavCom
- Garmin GTX330 upgraded to ES status for ADS-B “out”
- KX-150 Nav/Com upgraded to now include ILS
- JPI EDM900 Primary
- Four, Mid-Continent True Blue Power TA102 USB charging ports
- All headset jacks were rewired for stereo audio and an audio input port was added to the back seats
- Completely rebuilt circuit breaker panel with all new breakers
- Velcro-mounted, Open Flight Solutions “FlightBox” for 1090 and 978MHz ADS-B “in” traffic and weather, as well as a WAAS GPS to provide position information for our tablet moving maps
- New Concorde battery

*Indicates items that were added from the initial project.

See the accompanying photo and photo key on the following pages for a look at the new layout.

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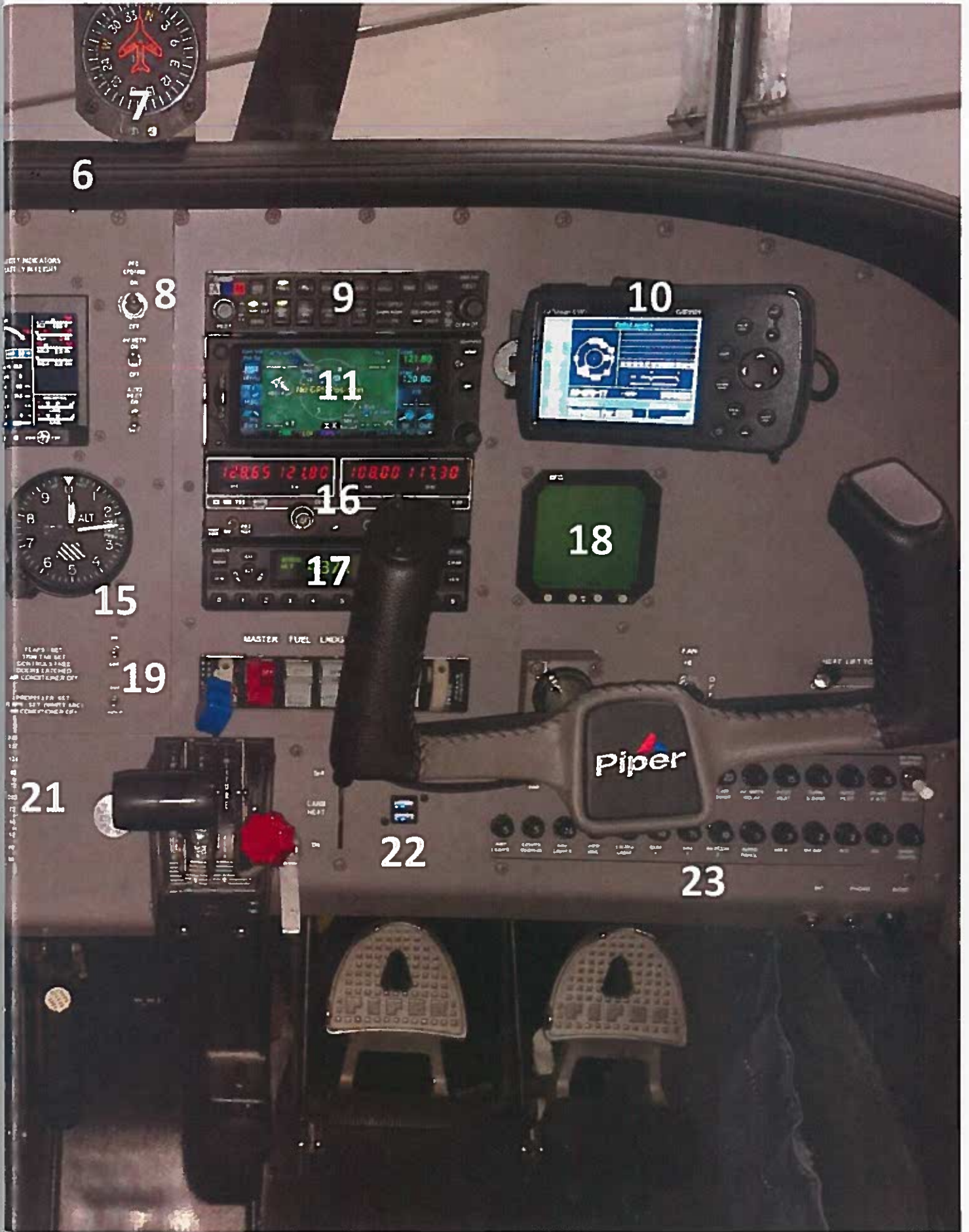
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21. Custom Silk Screened Text
22. 2.1 amp USB
23. New Circuit Breakers







The Open Flight Solutions' "FlightBox" Velcro-mounted to the baggage compartment sidewall. Note the two antennas and the WAAS GPS.



Mid-Continent True Blue Power TA102 USB Charging Port mounted on the sidewall in the back seat. Note the added port for portable audio which may be used when the back seat passengers are isolated from the "crew" on the audio panel. A similar installation (without the audio port) is on the opposite aft sidewall.

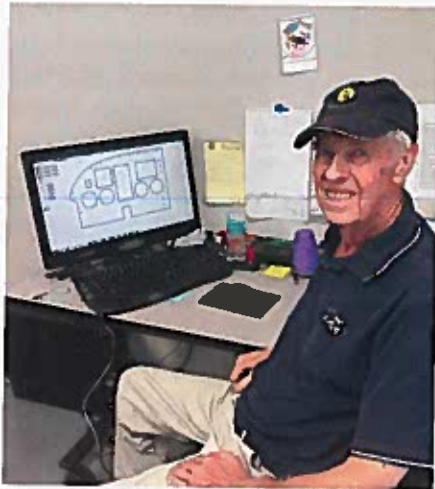
In essence, nearly everything that has electricity passing through it was upgraded to 21st century standards. As discussed in last month's installment, the alternator and regulator were add-ons and not part of the original plan, but we wanted to ensure the entire electrical system was upgraded to accompany our new equipment and breaker panel.

In addition to all of the upgrades, we said goodbye to our ADF, DME, vacuum horizon, vacuum pump, standby vacuum, and all related plumbing. And because the EDM900 is certified as a primary engine display, all of our old engine instruments were removed as well. We also needed the new compass as the old one was leaking fluid.

The glareshield was an add-on as well. Though the old one was still serviceable, and despite the fact that the new panel was no taller than the original, it simply wouldn't fit. As a result, a new, fancy, softer one was ordered and installed. Sure, we lost a handhold gripping point (and a few dash-bug carcasses!), but we now have a sleek, new, panel cover.

Obviously, this was a major project, so the decision was made to weigh the airplane rather than attempt the math to sort out our new empty weight and arm. We were hoping that the airplane would end up shedding a few pounds, but it gained almost 50 instead! Nevertheless, we still have one of the best useful loads that a four-seat, single-engine airplane can provide at exactly 1,140 pounds – or 708 pounds with full tanks (72 USG).

Thankfully, I was able to be in Venice for the final steps of the process. I got to meet all the staff at Sarasota that had worked on various phases of the project and, again, I was duly impressed. One of the major takeaways for me was that everyone who touched the project seemed sincere with their interest to ensure that the job was done right and that we were satisfied with the results.




Sarasota's Dewey Henderson explains the custom panel creation software pattern cutting sequence.

Finally, we got to the point where a shakedown flight was the next step. Sarasota's Dan Gualandri, my partner Paul, and I hopped in for the quick sortie. Upon firing the engine and launching into the air, the only squawks we noted were with respect to setting some audio levels for side tone and squelch on the coms and getting the EDM900 to communicate with the GTN 650 and vice-versa.

Paul and I were anxious to depart for home, but we resisted the temptation to do so, mostly due to weather and we also wanted to do some short hops around the Gulf Coast to make sure all systems were operating properly before we put any major mileage between ourselves and the professionals in Venice.

After a few flights, we did a follow up flight with Sarasota President, Kirk Fryar, who is one fast button-pushin' dude! He did some final tweaks to the audio levels for us and helped to explain some of the finer points of the integration and functionality of the systems. It was a quick, 10-minute flight with an incredibly steep learning curve of information to digest.

Once all of this was complete, we were ready to go. All docu-



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When the Dakota rolled up onto the scales for the big, post-project weigh-in, we were surprised to discover that we were up almost 50 pounds from the last, calculated weigh-in. That made us wonder just how accurate our previous weight was!

mentation was in order and the check had cleared, so we loaded up and started the trek back to our home base, Moncton New Brunswick, Canada (CYQM).

During the 13 or so hours of flying back to Moncton, Paul and I learned many of the tricks and capabilities of our new equipment. I won't go into detail about that now; rather I'll save it for next month. That's if I can find the time. I should probably go to work so that I can start paying for my share of this project!

Again, our many thanks go out to the staff at Sara-

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sota's Venice operation. We really felt welcome and we look forward to seeing them again – and next time Paul will bring the bagels! ✈️

In case you missed it:

See Panel Annals Part 1: *Forming a Plan* on page 42 of the April 2017 edition

See Panel Annals Part 2: *Out with the Old* on page 34 of the May 2017 edition.

See Panel Annals Part 3: *Beware of Scope Creep* on page 40 of the June 2017 edition.

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