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Editor's Briefing

by **Rebecca Groom Jacobs**

Plane to Plane

You might have noticed we have published numerous (pre-owned) aircraft comparison articles over the past two years – beginning with the "Top Turboprop" series in the fall of 2019, followed by "Piston Power" last summer. T&T contributor Joe Casey has authored 10 comparison articles in all, garnering a great deal of positive reader feedback. Here is the full list and timeline of articles (you can find each by visiting twinandturbine.com):

- Meridian and TBM 700C2 (September 2019)
- King Air C90 and King Air 200 (October 2019)
- Pilatus PC-12 and King Air 350 (November 2019)
- Meridian and JetPROP (December 2019)
- MU2 and B100 (January 2020)
- King Air 90 and Turbine Duke (February 2020)
- Cessna 310 and Beechcraft Baron 58 (May 2020)
- Piper Malibu and Piper Mirage (June 2020)
- Cirrus SR22 and Diamond DA62 (July 2020)
- Cessna 421C and King Air C90 (August 2020)

This month, Joe does it again with "Prop to Prop: Comparing the Cirrus SR22T and Piper Meridian" – an article that resulted directly from a reader's letter to the editor. Thank you, Terry!

Terry is a Cirrus owner and inquired whether a T&T team member could offer a direct comparison between a high performance single-engine piston (SR22T) and a single-engine turbine (Meridian). His listed areas of interest were fuel costs, overall maintenance, speed, fuel burn and training – but welcomed any additional information as he researches the step up to a turbine.

"People always seem to move from a single-engine to a twin, and I think the next progression is really moving up to a small turbine like the Meridian – and I have no idea where to start and find these answers. I am sure someone on your staff could help with this and your readers will find it very interesting. Thanks for your consideration."

It turns out Joe receives a lot of phone calls about this particular comparison and jumped at the opportunity to write the article. He covers Terry's requested performance and cost questions while adding in other considerations like insurance, avionics and mission profiles: "You'd think these two airplanes would never end up on the same want list, but they do. Why? They are both super cross-country machines that attract buyers who want the latest and greatest avionics, who will not compromise on safety, and who want something newer."

Check out the full story on page 10. We are super fortunate to have Joe on the team with his expansive knowledge of owner-flown aircraft and the market. And for a more technical outlook regarding the piston to single-engine turbine transition, turn to page 6 for Thomas Turner's overview of the differences in the engines, systems, flight characteristics and more. I look forward to hearing the feedback.

Is there a specific aircraft comparison (piston, turboprop or light jet) you would like to see in a future Twin & Turbine? Submit your request to my email below.

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When You Can't Lose That Nagging Feeling

You couldn't ask for a more perfect day. A languid, high-pressure system bathed the central states in unseasonably warm temperatures, clear skies and light winds, an unusual reprieve for early December. It was an ideal day to move my aircraft from its home field in Rogers, AR, to Columbia, MO, to start a major avionics upgrade. A check of the weather even promised a tailwind. Still, I had this nagging feeling like something was off. It wasn't the airplane – it's been running like a top. It was me, although I couldn't put my finger on what it was.

On the flight up, the feeling continued to worsen. I kept the checklist on my lap, making doubly sure I didn't miss any item on the cruise, descent or landing list. My landing was a squeaker and I taxied to the ramp and shut down. My husband, who was chasing me in another airplane, hadn't arrived yet, so I took my time after shutdown to secure the aircraft. After exchanging a quick thumbs-up with the linesperson, I began cleaning up the cockpit. In this COVID era, I have gotten in the habit of wiping down the cockpit surfaces with disinfecting wipes. As an Angel Flight Central pilot, I am required to follow a cleaning regimen before and following a mission, and concerned that my nagging feeling was the signal of an oncoming cold or worse, I was diligent in cleaning everywhere I touched and even where I didn't.

After my husband arrived, he dropped the keys in an envelope for the avionics shop, and we headed home. Feeling chilled, I opened a thermos of coffee I had brought along. I couldn't smell or taste it. By the time we landed, my head was pounding.

You can probably already guess where this is going. Four days later, I tested positive for COVID. That odd feeling I felt was the beginning of one of the worst illnesses I have ever experienced. Thankfully, my doctor was quick with a telemedicine appointment and prescribed steroids, antibiotics and an inhaler. I didn't require hospitalization, and I recovered at home, so I count myself fortunate. To keep tabs during the darkest hours, I drew on several tools in my pilot bag, including a pulse/oximeter to keep tabs on oxygen saturation levels and heart rate. I also didn't hesitate in taking a few hits of oxygen from portable O2 that we, fortunately, had available.

Now that I'm on the backside of this virus and out of quarantine, I am considering my steps to re-certify for flying again. The FAA guidance is relatively broad: If a pilot required treatment but was not hospitalized and otherwise recovered well, they can "unground" themselves and return to the cockpit. At the next flight physical, the pilot should report the illness, treatment, and the AME will note that they recovered well. A hospitalization is a reportable event to the FAA at the next flight physical, and you'll have to gather all of the relevant records, test results, and follow-up for your AME. If no medical deficits are present at that time, the AME will issue a medical.

If the pilot faced a challenging recovery and treatment, it's a little less clear when it's okay to return to the cockpit. The experts I've spoken with said to first visit your doctor to review pulmonary, neurological and cardiovascular status. You want to make sure you've fully recovered or continuing to improve if there are lingering effects. For me, a cough persisted for a few weeks, along with a bit of mental fogginess that I am told will resolve. However, when exactly am I fit for flight? That's the moving target that many of us who were unfortunately infected are chasing.

At the end of the day, it's widely recommended that a visit with your AME will help ensure you not only safely return to flight status but provide you confidence that you are good to go.

Several effective vaccines will be available in 2021, and the FAA has approved the use of at least one at this writing. That's good news and key for the world to move beyond the pandemic.

And how did my husband fare, considering he was shoulder-to-shoulder with me on that fateful flight home? He tested negative twice over eight days and never experienced symptoms.

My advice? Keep following the guidelines regarding masks, distancing and crowds, and don't let your guard down. I did, and I paid. You just don't know who it's going to take down or who it will pass over.

Here's to a safe, successful 2021 full of new aviation adventures!

Dianne White *is the executive director of MMOPA and editor of MMOPA Magazine. For a total of 14 years, she was editor of Twin & Turbine and has worked in the business aviation industry for nearly 30 years. She also serves on the board of directors for Angel Flight Central. An active multi-engine, instrument-rated pilot, Dianne lives in the Kansas City area and can be reached at* **editor@diannewhite.com.**

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Transition to SETPs

by **Thomas P. Turner**

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Congratulations! You're about to transition into a single-engine turboprop (SETP)! You'll need to use most of the skills you've developed as a pilot of a piston-engine airplane. But there are significant differences in the way you'll fly a turboprop – and only some of them are related to the engine itself. Let's take a broad overview of what you'll need to study and master in order to fly a SETP airplane.

Piston/Turbopropeller Differences

A turbopropeller engine ("turboprop") is similar to the piston engines with which you're likely familiar, in that both types are internal combustion engines. Where the process of combustion in a piston engine occurs in individual, distinct ignition events, a turbine engine is ingesting and compressing air, accepting fuel, and igniting that mixture continually. A piston engine might be considered a "rapid explosion" device, while a turbine is a "continually exploding" power source.

In a piston engine, exhaust is a waste product that is vented overboard (although some of that waste power is captured in supercharged or turbocharged piston engines). In a turboprop, by contrast, exhaust is the primary product. It spins turbines that, in turn, drive gears spinning the propeller (to generate thrust) and the engine's compressors (for combustion). A piston engine's ignition system operates the entire time the engine is running, providing a spark to the cylinders. Once a turbine engine starts the igniters are turned off. Ignition is constant as air and fuel are continually fed to the engine and the fire continually burns.

Piston engine power is measured in horsepower (HP) and is determined by manifold pressure, propeller speed and fuel flow. The power of a turboprop is measured in shaft horsepower (SHP). Shaft horsepower is a function of propeller RPM and the force (torque) applied to the propeller shaft. Some jet thrust is also produced by exhaust leaving the turboprop engine. This is added to the shaft horsepower to determine the equivalent shaft horsepower (ESHP). Jet thrust usually accounts for less than 10 percent of a turboprop's total power output.

A turbine engine compresses air, but the amount of compression is usually fixed. Therefore, as the airplane goes up in altitude and the ambient air pressure decreases, the turboprop's power output decreases as well – turbines are normally aspirated engines. Since turboprops generally have much more power than piston engines, they still

tend to outperform turbocharged piston airplanes at most altitudes. It's important for you to know, however, that turboprop airplane performance decreases with increases in density altitude.

Piston engines are controlled by throttles, propeller RPM and fuel mixture controls. Turboprops come in two basic designs: fixed shaft and free turbine. Fixed shaft turboprops, in which the propeller is directly connected to the engine and rotates any time the engine is running, use a power lever (sometimes called thrust lever) and a condition lever. The power lever adjusts torque and propeller speed. The condition lever controls engine speed and fuel flow. Free turbine (or split shaft) turboprops have a propeller coupling that permits the turbine to run without spinning the propeller. Free turbine engines have three engine controls: the power lever, setting pressure or torque output; a propeller RPM control, adjusting propeller speed (generally much slower than piston propeller speeds, usually 1500 to 1900 RPM); and a condition lever that is basically on ON/OFF control for the fuel. Leaning is not required in any turboprop engine but is controlled automatically when the pilot sets the power lever.

Turboprops have strict operating limits of torque, internal temperature, and rotational speed. Unlike piston airplanes, in which "full throttle" is almost universally correct for takeoff, it is almost never appropriate to push the power lever to the forward stop in turboprops. Exceeding torque engine speed or temperature limits for even a few seconds can be catastrophic to the engine. During engine start, you must watch for a "hot start" condition, that is, exceeding temperature limits, and immediately shut down the engine if it overtemps (the term is the same, but this is completely unrelated to "hot starts" in fuel-injected, piston engines). During the takeoff roll and climb, you must carefully watch the torque gauges, engine speed and temperature gauges, and advance the power lever only until reaching the maximum permissible amount on any one indicator. It's usually possible (and a very good idea) to predict ahead of time which variable – torque engine speed or temperature – will be the limiting factor for a given takeoff. Include this determination in your preflight planning. As the airplane climbs and power output decreases, you may be able to advance the power lever to maintain or even increase power in climb, as long as the engine stays within all of its limits.

Almost all turboprops have a reversible-pitch propeller. This permits you to direct thrust forward to dramatically shorten landing distances. You'll reverse the propeller by pulling the power lever all the way aft and over a stop. There are limits on reverse thrust, so you'll have to use this capability carefully. Like piston twin airplanes, SETP propellers are featherable. This reduces drag in the event of an engine failure, in the case of SETPs to increase glide distance. Despite their famed engine reliability, you still need to be ready for engine failures in turboprops.

You might think that, understanding the operation of a turboprop powerplant, that you'll know what you need to safely fly a SETP. However, the reality is that knowing how the engine works is a small part of flying a turboprop. Here are some of the other considerations:

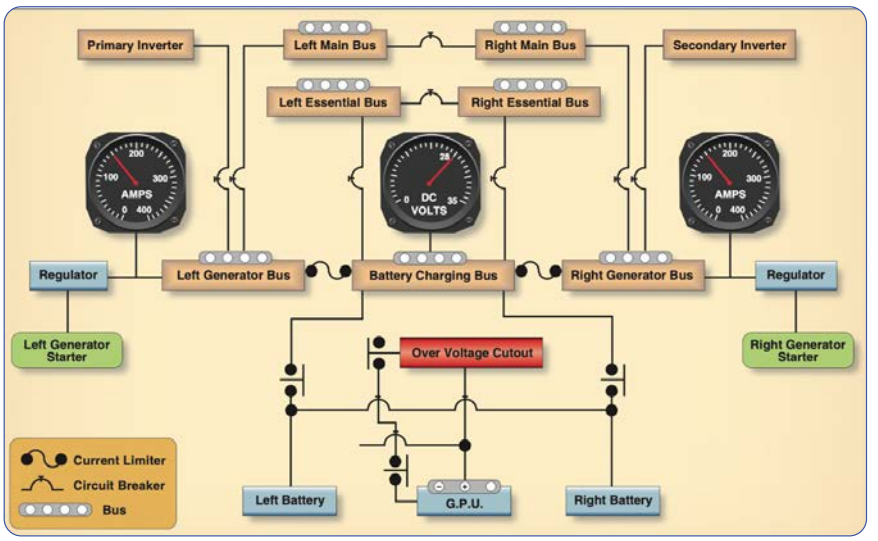
Systems

Most piston aircraft systems are incredibly simple in comparison to SETPs. As one measure of the quantum leap in complexity, count the circuit breakers in even a pressurized piston twin and compare that to the number in a SETP. Ice protection, electrical inverters, and in almost all cases, pressurization – you'll need to spend time "in the book" learning how each system operates in normal, abnormal and emergency situations. You are still a pilot in a turboprop, but you are just as much a systems manager.

To manage the systems properly you'll need to be strict about checklist use…not because you can't learn to fly a SETP without them, but because they are so complex it is more likely you'll miss something in high workload environments.

Flight Environment

Most, but not all, SETPs are pressurized. All turboprops are more efficient above 10,000 feet. When transitioning you'll need to become comfortable and capable in a medium- to high-altitude environment. Studies on hypoxia, supplemental oxygen use, high altitude navigation and meteorology are just as important in your studies as the airplane's flight manual. If the airplane is pressurized and its maximum certificated altitude is above 25,000 feet, you'll need a High Altitude endorsement to fly as pilot-in-command. Training for this endorsement should cover all the specialized high-altitude topics I listed. In the Flight Levels you're operating in the same airspace as airline and military



Even simple SETP systems are likely far more complex than in piston aircraft. Plan to spend a lot of ground time working toward mastery of how everything works, so you know how to use it in normal, abnormal and emergency situations.

pilots – and you are expected to fly with the same level of professionalism they exhibit.

High altitude or low, it's vital you fly the airplane precisely. At first you might think the added power of a turboprop means you can get away with a little sloppiness, especially during takeoff and landing. The reality is that even flown precisely, turboprops typically use more runway than piston airplanes. You'll often have less of a margin for imprecision – you need to be right on speed and glide path to land safely and precisely on speed and attitude for takeoff.

Flight Characteristics

There are several characteristics of most SETPs that cause them to fly differently than the piston airplanes with which you're more familiar. Let's look at the variables to get at least a basic idea of the differences:

Wing Loading: Wing loading is the weight carried by its wing area. The higher the wing loading the higher the stall speed. Takeoff and landing speeds increase, and climb speeds decrease as a result. Higher wing loading increases stability and reduces the impact of turbulence, but it often also results in higher stick forces – the airplane "feels" heavy, and it takes more effort to maneuver and to flare for landing. Often, landings in a SETP will be flown with some power instead of the piston-airplane practice of reducing power to idle when you flare. A comparison of the wing loading of familiar piston-powered airplanes, the Cessna 172 and Beech Baron 58, and popular SETPs, the Cessna 208 Caravan, TBM 900 and Pilatus PC-12, tells us that performance and handling will be noticeably different when you transition to turboprop airplanes (see Figure 1).

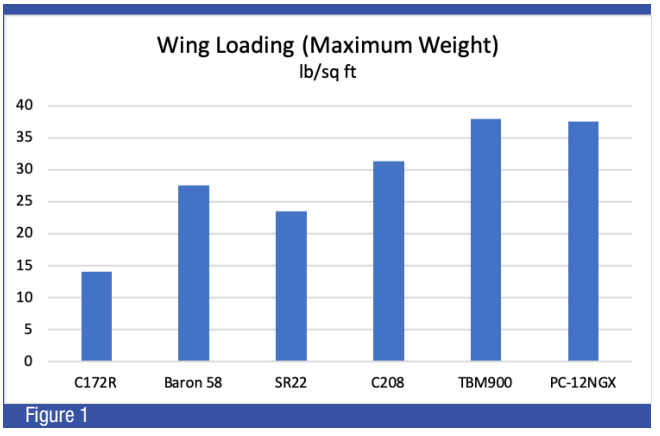


Figure 1

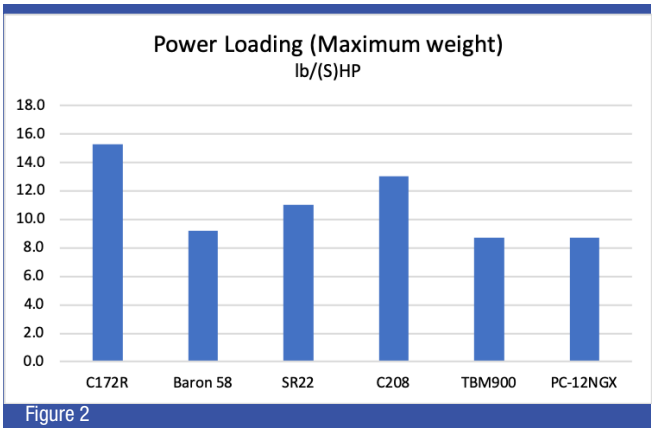


Figure 2

SETP Training Resources

Undoubtedly, you'll be required to attend some insurance-recognized, type-specific training for the transition into the SETP. Most recognized training includes classroom (or computer-based) instruction, simulator training and instructional flight – sometimes a lot of it – in the actual aircraft. There are a number of resources, however, that will help prepare you for the proverbial instructional firehose.

One of the best basic overviews is the FAA's Airplane Flying Handbook, chapter 14. The AFH is available free on the FAA website. Other options include the popular pilot training video sources and no small number of YouTube and similar videos online. But beware the online videos. They may not have been vetted for technical accuracy, or if accurate for one model or serial number string of aircraft may not be applicable to other models or serial number ranges. Don't forget the Pilot's Operating Handbook or Aircraft Flight Manual specific to the serial number airplane you'll fly. Anything you can do to understand the basics and "speak the language" before your formal training begins will help immensely when instruction starts.

Power Loading: Power loading is the airplane's thrust divided by its weight. The higher the power-to-weight ratio, the faster the airplane will accelerate, climb and cruise. Comparing power loading gives you an idea of the differences in performance (see Figure 2).

Weight and center of gravity range: Airplane stability and performance are determined in part by the location of its center of gravity (CG). An airplane with a wide range of allowable CGs will have changes in performance and handling depending on how it is loaded. If that allowable range is great even within limits there will be notable differences in the way the airplane flies.

Familiar piston airplanes have fairly narrow CG ranges. The Cessna 172, for example, has a roughly 6-inch range in allowable CGs from the forward to the aft limit. Cirrus' SR22 has an approximately 4-inch CG range at higher weights. The Beechcraft Baron 58 has a wider CG range, about 7.5 inches. The CG range of the Cessna 208 Caravan, a true freight hauler, is about 22 inches. The TBM 900's allowable CG range varies by roughly 9.5 inches. Pilatus publishes the CG range of the PC-12 in terms of percent of mean aerodynamic chord (MAC) – the average distance from the leading edge to the trailing edge of the wing. The PC-12's CG range is from 27 percent to 44 percent of the MAC. Even without converting this to distance in inches, you can visualize a wide variety of performance and handling with variations within the allowable center of gravity envelope. What's

this mean? Your SETP weight and balance calculations will be much more involved than you're used to in piston airplanes. Thank goodness we live in the era of weight and balance apps!

The Real Test

You'll be required to complete stringent training before you captain a SETP. The syllabus will undoubtedly focus on all the things we've covered above. You'll be trained to a level of mastery of all the differences in systems, operations, control and handling. With that mastery you should be able to avoid accidents, right?

Maybe not. The problems that have befallen others are likely to be the issues you'll face as well. With that in mind, let's take a quick look at the types of mishaps that have occurred in our three sample turboprop marques. As I write this, the NTSB accident database is undergoing revisions and I've not yet mastered its new search functions. SETPs are popular in Australia, however, so I did a search of the Australian Transport Safety Bureau history for our SETP sample. You can see that the things that lead to accidents in SETPs are not much different from the factors involved in piston airplane crashes.

ATSB Cause	C207	TBM	PC-12
Engine Failure	8	0	3
Loss of Separation/Coordination	5	1	5
Controlled Flight into Terrain	2	0	1
Pilot Incapacitation	1	1	1
Flap Failure/Loss of Control	1	0	0
Landed Short	0	0	1
Turbulence/Loss of Control	1	0	0
VFR into IMC	1	0	0
Runway Excursion	1	0	0
Wheels Up Landing	N/A	1	0
Synthetic Vision Failure	0	0	1

Your SETP Transition

It's been said that everything about flying light airplanes applies to heavier ones, but not everything about heavy airplanes applies to lighter ones. Everything you do (and are supposed to do) in piston airplanes – airspeed control, attitude control, rudder coordination, systems knowledge, checklist use – is even more important when you fly a SETP. And there's a lot more to learn. That's the challenge and the fun of your SETP transition. T&T

Thomas P. Turner *is an ATP CFII/MEI, holds a master's Degree in Aviation Safety, and was the 2010 National FAA Safety Team Representative of the Year. Subscribe to Tom's free FLYING LESSONS Weekly e-newsletter at* **www.mastery-flight-training.com.**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N64TG

PHOTO COURTESY OF CLINT GOFF

Prop to Prop

COMPARING THE CIRRUS SR22T AND PIPER MERIDIAN

by **Joe Casey**

Let's say you need a cross-country machine that will carry you, three others and bags to the destination with style, safety and speed. You've been flying for a while now, have a pilot's license and instrument rating, filled your first logbook, started the second, and are ready to move up. What started as an expensive hobby with little practicality for actually going somewhere with any questionable weather is being viewed in a new light. You now possess the complete package of skills, credentialing, desire and a $750,000 budget to buy and fly an airplane with an abundance of capability. Sound familiar?

PHOTO COURTESY OF CLINT GOFF

I get calls from this pilot frequently. As an active instructor in the owner-flown market, I am able to fly a lot of cool airplanes and offer no shortage of opinions. In fact, helping this type of pilot is one of the most satisfying aspects of my scope of work. Most of these pilots have already done a lot of homework, scouring Trade-a-Plane and talking with their local pilot community. But, when you are ready to stroke a three-quarter-million dollar check, you don't want to make a mistake. Hence, I get lots of phone calls about this particular move up.

Interestingly, when pilots come to me seeking advice on their next airplane, they often have two very different airplanes on their radar: the Piper Meridian and the Cirrus SR22T. Very different but commonly contrasted by potential buyers. I've also received an unusually high number of email requests from readers of this magazine to compare the two airplanes. By the way, I really do love getting feedback from readers of my articles! This article is proof that Twin & Turbine will respond to their readers' requests.

The Piper Meridian is a six-place, aluminum construction, turbine, pressurized, retractable gear airplane. The Cirrus SR22T is a four-place, composite construction, piston, non-pressurized, fixed-gear airplane. You'd think these two airplanes would never end up on the same want list, but they do. Why? They are both super cross-country machines that attract buyers who want the latest and greatest avionics, who will not compromise on safety, and who want something newer. They both accomplish the same mission, albeit with a few differences.

PHOTO COURTESY OF CIRRUS AIRCRAFT

Piper Meridian

The Meridian first came out in 2001 as the first turbine ever created by Piper Aircraft. Based on the successful Malibu/Mirage airframe, which was built explicitly with pressurization in mind, the Meridian was a natural progression upward for the piston pilot who wanted to go higher and faster. With cabin-class seating, a huge panel for all the latest gadgets and the bulletproof PT6 turbine engine up front, the Meridian is a fabulous airplane. The Meridian will cruise at FL280 at an average of 265 KTAS and burn 39 gallons of jet fuel each hour. The no-wind range of a Meridian with full fuel tanks is about 750 nm (with reserves). It is comfortable, quiet and a real performer.

Today, the earlier Meridians are regularly trading at an average of about $750k. An early 2001 Meridian with no upgrades, original avionics and average airframe/engine times will trade for just under $650k. As you add upgrades, paint, updated interior and new avionics, the trading price will go up. The original Meridian shipped from the factory with an admittedly inferior panel. These original panels are nearly obsolete today as they are not WAAS functional or ADS-B compliant, and factory support is nearly non-existent. But, the Meridian is such a good airframe that many of the avionics manufacturers have targeted the Meridian as an airframe to devote their research dollars. Many of these airframes have had their entire panel torn out and refitted with some spectacular boxes. Several are upgraded to the "Dual G500TXi/Dual G750" panel which has tremendous functionality and appeal.

The new Engine Information System (EIS) from Garmin was recently

approved for the Meridian. The autopilot in the Meridian is usually a trustworthy S-TEC 1500, or many have been upgraded to the safety-minded S-TEC 3100. Bottom line, an early Meridian bought today can have a panel with all of the safety features found on the newest of airframes. So, a buyer with a $750k budget can move up into the turbine world and enjoy all the benefits that a turbine and pressurization provide.

Who is this pilot who wants to burn turbine fuel? The same one who is looking at the Cirrus SR22T-G6.

Cirrus SR22T

The Cirrus SR22T is often contrasted with the bigger, faster, stronger turbines because it is a downright classy, super functional, and progressive airplane. The SR22 offers great looks, a smooth ride, an impressive safety record and all the gadgets.

The avionics suite in the latest version of the SR22T, the G6 model, is the best of the best. The whole cockpit is dominated by the Garmin Perspective-Plus avionics suite packed full of functionality. Huge, clear and colorful screens keep the pilot situationally aware and sometimes flat-out entertained. If you get tired of looking at the real world fly by, you can see it in either synthetic vision or use the infrared camera. Operating the Garmin Perspective-Plus never ceases to amaze me.

And that parachute...what a brilliant idea. Even if you don't believe all the hype about how many true "saves" the BRS airframe parachute has recorded (more than 435 as of this printing), it is a great sales tool. Countless SR22T aircraft have been sold because the BRS made the owner feel comfortable about sitting behind a piston engine. Whether or not 435 "saves" have occurred or not is not the point; The point is that some lives have assuredly been saved, and the pilot who wants an SR22T G6 is very interested in safety.

The cruise speed in the Cirrus will be dependent upon altitude and exact version (turbocharged or non-turbocharged), but a good average would be 180 KIAS with a 16.5 gph fuel burn. Yes, you can go higher and faster and stick O2 tubes up your nose, but who likes to do that? Most Cirrus pilots fly at an altitude that is comfortable for the passengers, and as the altitude goes down, so does the cruise speeds. To hit anywhere near the advertised 200 KTAS cruise speeds, you'll be in the flight levels sucking O2. Even so, any Cirrus is a good cross-country machine, with a range of 1,000 nm or greater with full fuel.

Operational Differences

The Cirrus is certainly going to be cheaper to operate. With a fixed gear, the chance of a gear-up landing is eliminated, so insurance costs of a Cirrus will be about half of that of a comparably priced Meridian. If you are a 1,000-hour instrument-rated, middle-age pilot with no accidents

or incidents, you'll write a check for about $5k for your annual premium to ensure $750k worth of airplane. The same coverage in a Meridian will cost you north of $12k. There'll be differences in premium with age, experience, flight time and other variables, but plan on insurance for the Meridian to be more expensive.

I think the Meridian is a vastly better icing platform. Wing deice boots beat weeping wings any day. The deice fluid is messy, detracts from useful load, and deice fluid can be consumed to a point of exhaustion in flight. The Meridian has a more robust icing platform along with the ability to climb to the higher flight levels, which is often too cold for airframe icing to occur. Plus, the additional raw power of the Meridian provides a good escape mechanism. If I'm in icing in any airplane, I want an exit strategy and lots of additional thrust to give me options. Although the Cirrus is a FIKI airplane, the Meridian is far more robust.

Mission & Training

Even though the Meridian has two more seats, rarely will the Meridian operate with more than four people onboard. The useful load of the Meridian with full fuel is only about three to four people and bags (depending upon the size of the occupants), so it should be construed by a buyer to be an "easy four-place airplane" and an "occasional six-person airplane."

The Cirrus SR22T-G6 will also carry the four people and bags, but like the Meridian, it will not carry that load with full fuel. But, with the low fuel burn provided by lean-of-peak (LOP) operations, a little bit of fuel goes a long way. A Cirrus SR22T will carry two mid-sized adults and bags and full fuel, but if you want to carry more people, you'll swap fuel to keep the takeoff weight under control. And, though the Meridian will burn more fuel, it goes much faster and jet fuel is cheaper to operate. Even so, the fuel costs in the Meridian will be more, but it does more with that fuel burn. Speed is addictive, and the Meridian has lots more speed.

You might want to go for a Cirrus SR22T-G6 if 80 percent of your missions are of shorter duration. It is no secret (but few owners seem to be able to grasp the fact) that speed translates into big differences on long trips but is inconsequential on the short trips. If you fly a 150 nm trip, the Cirrus will more than likely show up only a few minutes later than the Meridian. And, the Meridian will gobble the fuel on what will probably be a low altitude flight. I've got a Cirrus client in Texas who owns car dealerships around the state, most being within 200 nm of her home airport. She's considered upgrading to a Meridian, but the Cirrus does such a good job on those short trips that it just doesn't make sense to upgrade, even though she could afford the upgrade easily.

Concerning training, the Meridian will require more days and more

money to complete the training. A typical initial training event in a Meridian will be four to five days and cost more than $6k. Cirrus has one of the most envied training programs in the new airplane industry, with Cirrus Standardization Instructor Pilots (CSIPs) all over the country. Initial training in a SR22T will certainly cost less and take less time. The systems on a SR22T-G6 are simply less complex and take less time to learn.

Age & Experience

I frequently fly with pilots with more money than flight experience. I've seen 300-hour pilots attempt to move up to a Meridian. Sometimes this does not go well. The insurance underwriter will often add huge training requirements to the policy and make the premiums gargantuan to buoy their risk. Last year I had a client who had a training requirement of 100 hours of dual instruction and a first-year premium of $35k. We were able to complete the training requirement, but the cost to that owner was substantial. We see 50-hour initial training requirements in the Meridian quite regularly.

On the flip side of this equation, I've trained a 300-hour pilot in a Meridian and had it go extremely well. This pilot had an instrument rating, tailwheel experience, a commercial pilot license, and he wrote a well-worded letter to the aviation underwriters to explain his need, training desires and commitment to operational safety. The insurance provider helped this pilot and offered a really good policy at a reasonable rate. My point? A pilot needs to be able to look introspectively and determine if the pilot ability exists. An early jump to a turbine might be very doable for you with minimal experience, but most cannot easily make the jump. If you are a low-time pilot, a year or two in the Cirrus SR22T-G6 might be the right answer.

There's another demographic that might want to consider the Cirrus SR22T-G6 over the Meridian: pilots over 70 years of age. It is no secret that the pendulum has swung from the good ole days of insurance being available and cheap to the place we are today, where insurance is expensive, hard to bind, and not for the marginalized. The marginalized are those who have a previous claim or accident, those with limited experience, and those over 70 years of age. Insurance companies are thinning their portfolios in an effort to curtail losses, removing those who have the greatest potential of a claim.

The biggest loser in this magic trick is the pilot who has been an excellent pilot for decades but has tripped over the age of 70, and now insurance companies are shunning providing insurance. Simply put, it is easier to get insurance in the Cirrus, and it could be the better platform for the pilot who is entering the twilight years of piloting. I don't mean to offend anyone with this point, but I think I'm right. The pendulum will swing back to affordable and available insurance someday, but for now, it is just hard on anyone over 70 years of age.

Summary

The good news for potential owners of either of these airplanes is that they are both super-sweet airplanes. They are both still being made today (which means parts and support are excellent), they have stunning good looks, and they both have a proven track record of safety. If I were to open my hangar door to either of these airplanes, there'd be a big smile on my face. So, consider closely your station in life, your mission, your budget, and your desire to fly a best-of-breed airplane. T&T

Joe Casey *is an FAA-DPE and an ATP, CFI, CFII (A/H), MEI, CFIG, CFIH, as well as a retired U.S. Army UH60 standardization instruc-tor/examiner. An active instructor in the PA46 and King Air markets, he has accumulated 14,300-plus hours of flight time, with more than 5,200 dual-given as a flight instructor. Contact Joe at joe@flycasey.com or 903.721.9549.*

The Worldwide General Aviatio

owner/operators and chief pilots of these air

100%

TOTAL MARKET COVERAGE

JETS - 17,806

CHIEF PILOTS & OWNERS

COUNT	AIRCRAFT
36	AIRBUS ACJ319
30	ASTRA 1125
32	ASTRA 1125SP
57	ASTRA 1125SPX
29	BEECHJET 400
266	BEECHJET 400A
195	BOEING BBJ
503	CHALLENGER 300
40	CHALLENGER 600
26	CHALLENGER 601-1A
121	CHALLENGER 601-3A
54	CHALLENGER 601-3R
325	CHALLENGER 604
7	CHALLENGER 800
148	CITATION 500
340	CITATION 525
318	CITATION BRAVO
187	CITATION CJ1
96	CITATION CJ1+
240	CITATION CJ2
225	CITATION CJ2+
476	CITATION CJ3
174	CITATION CJ3+
368	CITATION CJ4
189	CITATION ENCORE
74	CITATION ENCORE+
392	CITATION EXCEL
14	CITATION I
280	CITATION I/SP
445	CITATION II
54	CITATION II/SP
155	CITATION III
124	CITATION LATITUDE
247	CITATION M2
467	CITATION MUSTANG
130	CITATION S/II
323	CITATION SOVEREIGN
105	CITATION SOVEREIGN+
310	CITATION ULTRA
285	CITATION V
31	CITATION VI
122	CITATION VII
329	CITATION X
38	CITATION X+
253	CITATION XLS
301	CITATION XLS+
1	DIAMOND I
32	DIAMOND IA
16	DORNIER ENVOY 3
304	ECLIPSE EA500
75	EMBRAER LEGACY 500
100	EMBRAER LEGACY 600
53	EMBRAER LEGACY 650
247	EMBRAER PHENOM 100
328	EMBRAER PHENOM 300
80	FALCON 10
22	FALCON 100
16	FALCON 200
242	FALCON 2000
27	FALCON 2000EX
34	FALCON 20C
15	FALCON 20C-5
17	FALCON 20D
1	FALCON 20D-5
10	FALCON 20E
49	FALCON 20F
75	FALCON 20F-5
197	FALCON 50
8	FALCON 50-40
118	FALCON 50EX
178	FALCON 900
24	FALCON 900C
116	FALCON 900EX
156	GLOBAL 5000
123	GLOBAL EXPRESS
25	GULFSTREAM G-100
239	GULFSTREAM G-200
14	GULFSTREAM G-300
24	GULFSTREAM G-400
313	GULFSTREAM G-450
11	GULFSTREAM G-500
602	GULFSTREAM G-550
27	GULFSTREAM G-II
12	GULFSTREAM G-IIB
111	GULFSTREAM G-III
175	GULFSTREAM G-IV
338	GULFSTREAM G-IVSP
204	GULFSTREAM G-V
38	HAWKER 1000A
2	HAWKER 125-1A
2	HAWKER 125-1AS
12	HAWKER 125-400AS
2	HAWKER 125-600A
1	HAWKER 125-600AS
61	HAWKER 125-700A
72	HAWKER 4000
223	HAWKER 400XP
44	HAWKER 750
153	HAWKER 800A
14	HAWKER 800B
398	HAWKER 800XP
42	HAWKER 800XPI
88	HAWKER 850XP
187	HAWKER 900XP
2	JET COMMANDER 1121
2	JET COMMANDER 1121B
2	JETSTAR 731
4	LEARJET 23
12	LEARJET 24
2	LEARJET 24A
7	LEARJET 24B
20	LEARJET 24D
8	LEARJET 24E
6	LEARJET 24F
4	LEARJET 25
19	LEARJET 25B
4	LEARJET 25C
45	LEARJET 25D
4	LEARJET 28
32	LEARJET 31
182	LEARJET 31A
26	LEARJET 35
398	LEARJET 35A
21	LEARJET 36
33	LEARJET 36A
32	LEARJET 40
243	LEARJET 45
225	LEARJET 45XR
92	LEARJET 55
6	LEARJET 55B
8	LEARJET 55C
307	LEARJET 60
623	PILATUS PC-12/45
149	PREMIER I
1	SABRELINER 40
7	SABRELINER 40A
2	SABRELINER 40EL
2	SABRELINER 40R
4	SABRELINER 60
5	SABRELINER 60ELXM
68	SABRELINER 65
7	SABRELINER 80
1	SABRELINER 80SC
67	WESTWIND 1
1	WESTWIND 1123
14	WESTWIND 1124
50	WESTWIND 2

TURBOPROPS - 12,801

CHIEF PILOTS & OWNERS

COUNT	AIRCRAFT
403	CARAVAN 208
1,523	CARAVAN 208B
155	CHEYENNE I
16	CHEYENNE IA
206	CHEYENNE II
56	CHEYENNE III
38	CHEYENNE IIIA
57	CHEYENNE IIXL
35	CHEYENNE IV
235	CONQUEST I
291	CONQUEST II
38	JETSTREAM 31
63	JETSTREAM 32
52	JETSTREAM 41
37	KING AIR 100
450	KING AIR 200
17	KING AIR 200C

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Do you want your marketing message to reach these key decision makers?

ADVERTISE IN TWIN & TURBINE

COUNT	AIRCRAFT
16	KING AIR 200T
229	KING AIR 250
182	KING AIR 300
14	KING AIR 300LW
617	KING AIR 350
62	KING AIR 350C
8	KING AIR 350ER
387	KING AIR 350I
4	KING AIR 350IER
8	KING AIR 90
6	KING AIR A/B90
76	KING AIR A100
184	KING AIR A200
34	KING AIR A90
197	KING AIR A90-1
105	KING AIR B100
1,038	KING AIR B200
107	KING AIR B200C
99	KING AIR B200GT
5	KING AIR B200SE
8	KING AIR B200T
47	KING AIR B90
302	KING AIR C90
38	KING AIR C90-1
186	KING AIR C90A
378	KING AIR C90B
76	KING AIR C90GT
88	KING AIR C90GTI
150	KING AIR C90GTX
13	KING AIR C90SE
258	KING AIR E90
173	KING AIR F90
28	KING AIR F90-1
5	MERLIN 300
13	MERLIN IIB
8	MERLIN III
22	MERLIN IIIA
44	MERLIN IIIB
14	MERLIN IIIC
3	MERLIN IV
11	MERLIN IV-A
101	MITSUBISHI MARQUISE
18	MITSUBISHI MU-2F
1	MITSUBISHI MU-2G
15	MITSUBISHI MU-2J
37	MITSUBISHI MU-2K
12	MITSUBISHI MU-2L
25	MITSUBISHI MU-2M
24	MITSUBISHI MU-2N
29	MITSUBISHI MU-2P
47	MITSUBISHI SOLITAIRE
796	PILATUS PC-12 NG
197	PILATUS PC-12/47
296	PIPER JETPROP
74	PIPER M500
92	PIPER M600
602	PIPER MERIDIAN
198	QUEST KODIAK 100
2	ROCKWELL 680T TURBO
5	ROCKWELL 680V TURBO II
4	ROCKWELL 680W TURBO II
4	ROCKWELL 681 HAWK
85	SOCATA TBM-700A
90	SOCATA TBM-700B
381	SOCATA TBM-850
121	SOCATA TBM-900
38	SOCATA TBM910
136	SOCATA TBM930
6	STARSHIP 2000A
50	TURBO COMMANDER 1000
22	TURBO COMMANDER 690
131	TURBO COMMANDER 690A
135	TURBO COMMANDER 690B
73	TURBO COMMANDER 840
20	TURBO COMMANDER 900
19	TURBO COMMANDER 980

TWIN PISTON - 6,872 OWNERS

COUNT	AIRCRAFT
35	BARON 56 TC
1,566	BARON 58
446	BARON 58P
118	BARON 58TC
3	BARON A56TC
335	BARON G58
158	BEECH DUKE B60
150	CESSNA 340
480	CESSNA 340A
49	CESSNA 402B BUSINESS LINER
110	CESSNA 402C
20	CESSNA 404 TITAN
312	CESSNA 414
430	CESSNA 414A CHANCELLOR
36	CESSNA 421
30	CESSNA 421A
335	CESSNA 421B
713	CESSNA 421C
38	CESSNA T303
100	DIAMOND D42
65	PIPER 600 AEROSTAR
3	PIPER 600A AEROSTAR
44	PIPER 601 AEROSTAR
4	PIPER 601B AEROSTAR
182	PIPER 601P AEROSTAR
21	PIPER 602P AEROSTAR
509	PIPER CHIEFTAIN
20	PIPER MOJAVE
280	PIPER NAVAJO
196	PIPER SENECA
13	ROCKWELL 520 COMMANDER
3	ROCKWELL 560 COMMANDER
11	ROCKWELL 560A COMMANDER
7	ROCKWELL 560E COMMANDER
6	ROCKWELL 560F COMMANDER
12	ROCKWELL 680 SUPER
3	ROCKWELL 680E
14	ROCKWELL 680F COMMANDER
11	ROCKWELL 680FL GRAND COMMANDER
4	ROCKWELL 680FLP GRAND LINER

HIGH PERFORMANCE MOVE-UP SINGLES - 5,726 OWNERS

COUNT	AIRCRAFT
200	BEECH BONANZA
435	CESSNA 182
52	CESSNA 206
373	CESSNA P210N
21	CESSNA P210R
54	CESSNA T182
790	CIRRUS SR20
2,875	CIRRUS SR22
26	MOONEY ACCLAIM ULTRA
11	MOONEY OVATION ULTRA
271	PIPER MALIBU
93	PIPER MATRIX
525	PIPER MIRAGE

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Currency, Competence and Confidence

by **Kevin Ware**

In my area of the country at least (Pacific Northwest), the COVID pandemic has resulted in a serious reduction in the amount of business and personal flying being conducted. This has been particularly noticeable to pilots like me who fly professionally on a fill-in or contract basis. Even the full-time guys are just barely getting enough flight time to justify their pay.

It has also affected pilots who fly their own airplanes for business or recreational reasons beyond the immediate touch-and-go pattern, given all the issues of arranging accommodations and meals at distant locations as opposed to just staying home. In turn, there is a reduction in pilot currency, which then makes you wonder just how "competent" you still are…this thinking (even for the most egotistical of us) tends to decrease our confidence. We might be more reluctant to tackle weather that would have otherwise not been a concern, which leads to an even further reduction in flight hours. It is like falling dominoes.

So, with all this in mind, I got out of bed on a recent winter sunny morning, thinking about how much (or how little) flying I had done over the past couple of months – frankly, not quite as confident in my flying abilities as this time last year. I decided the only way to deal with this discomforting feeling was to go down to the airport and actually fly the airplane. Which I did, being particularly diligent about watching myself closely.

I started out carefully running the before start flow pattern I have used for the past 20 years and 2,000 hours in my own Cessna 340. And then, just to make sure I had not missed anything, I ran the written checklist through verbally more than one time. Grinning to myself that I had not missed anything in the flow pattern, I then started the engines.

Now, it is not just the pilots who are suffering from this lack of utilization currency malady, but also the airplanes. My own airplane had not been flown since the middle of the last month, and it took just a bit more priming and coaxing to get the engines started than it normally does. Once they fired up, I got all involved in keeping the RPM down to just over idle levels until the oil pressure finally came up. Before that, my mind visualized pistons grinding up and down against the cylinder walls without any

oil to provide lubrication. Once that period of wincing and grimacing had passed I released the brakes and taxied out, making sure I kept the nose wheel exactly on the yellow line.

Upon arriving at the run-up area, it appeared I was not the only one out trying to restore confidence as there were three single-engine piston airplanes in front of me, slowly working their way through checklists. Finally, it was my turn to taxi into position and hold on the runway while waiting for traffic that had just landed to clear. As I waited, my question of confidence again presented itself. So, just to make sure all was right, I pushed up the engines to about 70 percent power. I checked the oil pressure, temperature and fuel flow at least two times, plus dropped my right hand down to the fuel supply valves at least twice (already done before start-up) just to make sure they were on the proper tanks – all the while thinking to myself, this is not something I would normally do.

The takeoff went smoothly enough, although I noticed it took me much longer than usual to advance the throttles to full power. Maybe this was because I kept glancing at the engine gauges to make sure everything over there was okay before we arrived at anything close to V_r or rotation speed. Once airborne, I got the gear and flaps up right away, just as the memory checklist items require, but decided to stay in the pattern to make at least one landing just to make sure I could still do it halfway safely. And, to my surprise, the approach and landing went amazingly well. Right in the touchdown zone, with the nose wheel on the white line and the main gear just squeaking as they gently arrived at the pavement. I almost regretted not having any passengers on board, such a nice landing would surely have impressed.

Having convinced myself I could still land the thing, I departed the pattern and deliberately, on short notice, assigned myself the task of setting up the instrument panel up for one of the local instrument approaches. In a Garmin-equipped airplane this takes quite a few keystrokes that must be done in a sequence, the order of which is relatively easy to forget. For a few moments I found my fingers on the buttons saying out loud to myself, "Now, let me see, just how did I do this?" But, after just a couple missteps, I managed to program the approach I wanted and select "direct" to the initial approach point (IAP). Then, I turned on the autopilot, activated NAV and ALT, and let the airplane take care of itself while I talked to the controller.

The frequency was strangely quiet, so just to make sure someone was there, I opened up the conversation with the controller with my N-number, a pleasant "good morning," and a question as to whether he could handle a pop-up. Probably bored stiff down there with the lack of traffic, he immediately agreed, identified where I was and gave me an IFR transponder code. All of which I acknowledged in what I hoped was my usual confident manner. The approach required a holding pattern, which I purposely wanted to do anyway because IFR currency requires it. I realized it would be a parallel entry, but I was happy to see the

Garmin box also suggest the same. My confidence was gradually increasing.

For this airplane to shoot the approach on autopilot you must switch the autopilot from NAV to APCH, something I often find instrument students fail to do. Keeping in mind that I would not want to make such a mistake, I make sure to hit the APCH button, then look up to see if that indication showed up on the annunciator panel, which it did. From that point the approach was easy until I started getting close to the glide slope intercept altitude, only to notice there were no yellow glide slope needles showing up on the visual display. I tapped on the instrument a couple of times thinking it may have gotten stuck from lack of use, but that didn't fix it.

In the meantime, the annunciator panel GS (glide slope) light came on, and the autopilot starting trimming nose down to reach a 400 feet per minute or so descent, which with the gear still up caused quite an acceleration. Yikes, regardless of the lack of glide slope needles being AWOL, the airplane itself seemed to know what it was doing, and I was getting behind it. Dropping the gear and reducing the power slightly caught me up with the airplane, at which time I reached for the landing checklist to make sure I had not missed anything.

Sure enough, somehow during the glide slope needle problem, I had forgotten to turn on the pulse light switch that flashes the landing lights on and off in a very noticeable back and forth fashion. I got that oversight fixed then it also occurred to me that if I was going to do this completely right, I needed the radar altimeter alarm set

for the missed approach point altitude. Luckily, I remembered what to do and the audio alarm went off just exactly at the right altitude. Off went the autopilot, the throttles stayed in the same position, my eyes glanced down again to the three green landing lights, and I again checked to make sure the flaps were all the way down. The landing was almost perfect, and I rolled out exactly on the white line until reaching the yellow one leading to the taxiway.

Now feeling pretty good about myself, I decided to repeat the entire endeavor and mix it up with a simulated engine failure while on the approach. The takeoff went fine, and I found I had the engines up to full power much earlier than on my first try. The controller greeted me like a long-lost friend and I was soon back on the approach with the faulty GS needles and all. With the autopilot seemingly knowing where the glide slope was, I gradually pulled the right engine back to 12 inches of MP and added 3 to 4 inches on the left. Occasionally, when doing this in my airplane, the autopilot will not handle the change in rotation about the vertical axis and kick itself off. I am carefully watching for this and wondering what I will use for glideslope monitoring if that happens. But for whatever reason, the autopilot decides to be kind to me and hangs in there. I arrive over the threshold with the airplane slightly turned toward the good engine, but manage to get that straightened out just before touchdown right on the white line, a landing which I must admit was safe enough, but not my best one of the day.

Taxing back in, I see my wife already has the hangar door open, the lights on and the orange motorized pushcart outside where I will need it. She knows me well and wonders why I have such a wide grin on my face as I get out of the airplane. I explain I am feeling quite happy with myself because I had not been flying much and was worried about a loss of competence. And, for a guy who has 11,000 hours and flying since age 18, that in turn had started to produce a very discomforting loss in my sense of confidence. But, all was better now.

If during this COVID mess you are getting worried that you are losing any competence (and confidence), my advice is just go fly your airplane. T&T

Kevin Ware *is an ATP who also holds CFI, MEII and helicopter ratings, has more than 10,000 hours and is typed in several different business jets. He has been flying for a living on and off since he was 20, and currently works as a contract pilot for various corporations in the Seattle area. When not working as a pilot he is employed part time as an emergency and urgent care physician. He can be reached at* **kevin.ware2@aol.com**.

by **Kevin R. Dingman**

Shirt Tails

Remembering Our First Solo Flight(s)

Our pilot ranks have shrunk over the last four decades and the aviation alphabet groups (EAA, AOPA, GAMA, NBAA, etc.) have made a concerted effort to get more younglings interested in flying – and I'm all for it. How could we not assist in exposing future generations to the attributes of aviation? Plus, there's strength in numbers: political influence, economic efficiencies of scale in manufacturing, fuel distribution, insurance underwriting, airport funding, and a myriad of other tertiary services afforded a large group. And as a nation, we need a pilot-pipeline for the military, Part 135 operators and Part 91 instructors, the airlines and our space program. But learning to fly appears to be more strewn with obstacles than ever before: COVID, the cost of airplanes, fuel and maintenance, lack of instructors, product and personal liability and airspace complications.

> The best and most beautiful things in the world cannot be seen or even touched – they must be felt with the heart.
>
> – Helen Keller

In addition to the above hurdles, has the process of learning to fly become a bit too clinical? Perhaps my grandparents had similar thoughts concerning the big band sound vs. rock and roll. And no, I didn't listen to Glen Miller, Count Basie, Duke Ellington or Tommy Dorsey on my Walkman. Admittedly, this impression of today's flight training comes from an airline pilot near the end of a 30,000-hour career whose restricted radiotelephone operator permit says 1972. Also, my opinions and writings about aviation often lean towards the emotional gratification that flying elicits more often than aviating techniques or training.

Who'd-a-thunk that so many GA pilots would routinely fly single-pilot jets and prop-jets in the flight levels? GA airplanes have become more complicated in power, avionics, speed and the airspace environment in which we operate. The upside to a more clinical approach to training is our best-to-date situational awareness, access to real-time data (especially navigation, engine parameters and weather), fuel efficiency and our ever-improving safety record. And our safety record has occasionally been a newsworthy topic for the less technically informed public.

Train Wreck

A disaster or failure; a disorganized, problematic, or chaotic person or thing; an incongruous situation.

With cameras literally everywhere (including the proliferation of inflight Go-Pro and snooping drones) and images and stories attained by them distributed worldwide in minutes or seconds, the last thing GA needs is bad press. While there were indeed some astonishing gaffes at Boeing, we could argue back-and-forth about the media's part in the grounding of the 737 MAX. It used to be that the most dramatic of crashes was a train wreck. So much so as to create the metaphor of "train wreck" to describe the highest order of vivid, intense and dire of outcomes. The analogy could describe everything from a bad marriage to an election, golf game or a ruined Thanksgiving dinner.

Due to air travel popularity and its elevation over (pun intended) train travel, the ambiance of relaxing train travel has succumbed to the sometimes tense and arduous, but high-speed and economical airlines. And now, videos (even TV shows) of sensational air disasters populate our media, becoming the new train wreck. But even so, "airplane wreck" doesn't roll off the tongue nearly as colloquially as does "train wreck." So, the train wreck metaphor has wings (I couldn't resist), and for now, a colloquial confrontation of metaphors will never leave the station (again, couldn't resist).

Besides the effects of poor pilot performance on public opinion, we all understand the benefits of clinical-like training: pilots and pilot hopefuls must navigate the expense to rent or buy, the cost of the aviation support system, hull, engine and liability insurance, time constraints, airspace restrictions, traffic congestion, a wide range of aircraft performance, and the time needed to learn all of the above. A clinical approach is more efficient. And we must take this approach because s*** (um, stuff?) happens in airplanes. We've all seen it (those that have and those that will), and the flip-side of the airplane romanticism coin is the boogeyman side. At the very beginning of our flight training we didn't know him very well – someone had to introduce us.

Remember When?

During the first eight to ten hours of flight instruction, we train students and experienced pilots in a new airplane about aircraft control, emphasizing airspeed, AOA, takeoff and landing, aircraft systems and failure modes of said systems, including engine failures. And we teach newbies how to talk on the radio because you can't go anywhere these days without talking to "The Man." This training regimen has been the case in every airplane I've flown from single-engine GA to Air Force trainers and fighters, to multi-engine transports.

Thankfully, some of the traditional, happy side of the coin celebrations of learning to fly, particularly the first solo, remain in practice: drenching the student with water or cutting off and displaying the back of his or her shirt. It's a practice both instructors and students look forward to and is practiced around the world. After you have completed your flight, your instructor congratulates you and cuts off the tail of your shirt, which then joins other shirt tails on a wall of the school. The act of cutting the tail symbolizes your accomplishment and instructor's faith that you can fly without needing help – and you know all about those traditions. But did you know…

Dead Bug

Another option is called the ice bucket challenge and is a more "exuberant" celebration. Alternatively, the pilot could be thrown into a swimming pool or dunk tank. In the military you may be tossed into a dunk tank, asked to eat a raw chicken egg, shell and all, or other dead or alive things (crickets, worms, ants, etc.) with and without

The mighty M-10, Mooney Cadet.


Following my F-16 solo.

jalapeno or habanero peppers. Then, of course, there are the semi-surreptitious fighter pilot traditions that occur at the O-Club (in my day it was the modern-day, refined version of an old western saloon). These occur in the evening and may involve drinking, singing, playing a highly modified and physical version of billiards called "Crud," the throwing and breaking of things, as well as verifying that you respond properly to code words like "Dead Bug."

My first GA solo was in a Mooney Cadet (almost hit a party balloon on downwind), my first jet was a T-37 (almost forgot to restart the right engine after the IP hopped out), and my first in a fighter was the F-16 (just trying to "not screw the pooch"). Our first solo flight is something memorable to all pilots. And it should continue to be celebrated with the best (safe and politically correct) traditions.

Your Airworthiness

Of course, there is no soloing in the Part 121 world. But whether we are new to the airplane or have flown it for many years, at the airlines and in other multi-crew endeavors, we have a partner to police our compliance with procedures, decision-making and piloting techniques. There are no traditions or celebrations for soloing an airliner, but as in other brotherhoods, airline pilots have stories to tell and ways to celebrate professionally (i.e., no eating strange things or breaking stuff).

And with two pilots, tact is essential when keeping each other from slipping off the rails while flying and when off duty. Nowadays, they have labeled this lovey-dovey, kumbaya approach to coordinating with the other pilot: CRM (Crew Resource Management). One MD-80 FO often highlighted my know-it-all seniority, missteps, and occasional brilliance using his signature quip. With a royal acknowledgment of my requests, his assessment and opinion of nonstandard or critical events, as well as deeds well-done, was announced with the retort: "Yes, Your Airworthiness," or "I disagree, Your Airworthiness." "Nicely done, Your Airworthiness," or, "Your turn to buy, Your Airworthiness." It was CRM at its most effective level of functionality. Greg has since retired (early), and I miss him.

> The meaning of life is to give life meaning.
>
> – Viktor E. Frankl

I'm grateful that my family didn't allow me to wander aimlessly, looking for the meaning of life.

My grandma, grandpa and a neighbor introduced me to the attributes of academia. My mom – time management, etiquette and chivalry. My dad – hunting, music, golf and flying. And now, I've spent my entire life flying airplanes, trusting but questioning academia, always using the best leadership and chivalry I could muster and applying a good effort towards etiquette. The views, the freedom, the intellectual and emotional gratification of aviation are all priceless. The most inspiring ones often being spiritual, the "touch the face of God" moments that only we pilots are occasionally afforded. When you have one, savor it and then share it with others.

Pay it Forward

> If you want more kindness in the world, put some there.
>
> – Zero Dean

In the world of GA, we are most often alone in our decision-making, regulatory compliance, application of flying techniques, and to catch our own mistakes. We have no one to tell us when we fall outside of parameters or completely off the rails – or to call us "Your Airworthiness." Strict checklist discipline as well as continuous training and self-evaluation are critical in the endeavor to maintain our personal airworthiness. It's this level of professionalism that will help us in GA to stay safe and avoid a train wreck. But let's try to have some fun along the way and pass our love of flying on to the younglings; they're out there. It's still possible to see an occasional car parked at the airport fence or near the FBO with folks watching airplanes come and go. Perhaps 2021, our post-COVID year, will be another new beginning for GA – and with our help, some pilot younglings as well. Happy New Year, my friends. T&T

Kevin Dingman *has been flying for more than 40 years. He's an ATP typed in the B737 and DC9 with 24,000 hours in his logbook. A retired Air Force major, he flew the F-16 and later performed as an USAF Civil Air Patrol Liaison Officer. He flies volunteer missions for the Christian organiz tion Wings of Mercy, is employed by a major airline, and owns and operates a Beechcraft Duke.Contact Kevin at* **dinger10d@gmail.com**.

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A section dedicated to the writings and ownership stories of T&T readers.

Confessions of a G1000 Driver

by **Alex Jones, Owner-Pilot**

I bought my G58 Baron in January 2015 as an upgrade from the A36 Bonanza I had been flying for four years. The concurrent moves – Bonanza to Baron and modular to G1000 avionics – both offered improved utility with some additional challenges.

The Baron has allowed me to travel safely around the country with my family for years. It has carried us to some of our most memorable vacations, including Nantucket, northern Michigan, Montana, Colorado and others. From our current home in Chicago, we can fly to central Ohio for family visits in just over 90 minutes each way – something we do at least half a dozen times a year. This easily wins over a 6-hour drive, and I can beat the airlines door-to-door.

Single to Twin

The purported safety advantage of a twin over a single is one of the most oft-cited and controversial reasons for the move. I will leave that topic aside and focus on other practical improvements that get little attention yet make a big difference in everyday life.

The Baron has a spacious nose baggage compartment. It can hold three carry-on size suitcases, in addition to the chocks, tow bar and quarts of oil I carry. The aft baggage is the same as the A36; very useful, but not that large. These three cases just wouldn't make the trip in its single sibling. For a family, this makes the airplane practical for weeklong cross-country trips we couldn't have made in the Bonanza without sending our luggage by UPS ahead of time.

Living in the Great Lakes region, known-ice certification increases the plane's utility between October and April when there is often a stratus cloud deck with icing potential somewhere along our route. A piston twin like the Baron with "k-ice" is capable of climbing or descending

through such a layer to reach clear conditions above or below. But there are limits. It will pick up some ice, which will impede performance, so it is imperative to know the level of the bases and tops – you don't want to hang out in icing conditions for the whole trip. Skew-T/log P diagrams are very useful for this. Now, this may seem like a lot of hardware to carry around for a few minutes' use on the occasional trip, but these are all trips I never would have made in the Bonanza. And for every trip where I use the Baron's de-icing capabilities, there are several more where I thought we might need it and wouldn't have attempted the trip without it. About half of our wintertime trips are ones I wouldn't have tried in the Bonanza.

The Bonanza is a strong climber down low, especially when light, but the Baron does better. Below gross weight in the cold weather, I routinely see 1,500-plus FPM. In warmer weather and at higher weights, 600 FPM is typical later in the climb. In real terms, this means less time bumping around below fair-weather clouds in the summer and less exposure to potential icing in winter. Cruise speed is 185 KTAS lean of peak on about 28 GPH. This is a modest cruise speed increase over the Bonanza for twice the fuel burn, but this is the price of flying a much more flexible and capable airplane.

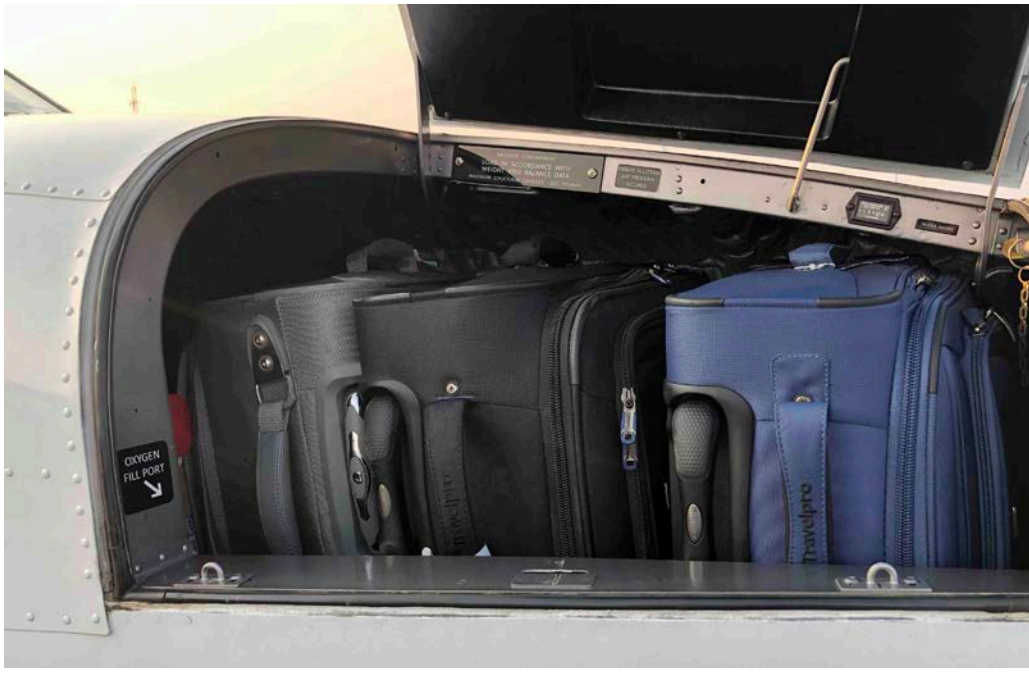
G1000 Avionics

As for the avionics, I wanted a pre-2005 model, so I could upgrade the panel the way I'd done in my old Bonanza. The Bendix King KCS-55A HSI had become unreliable, and in late 2012, I rode the upgrade-logic elevator to the top floor. I started with the honest intention of a Sandel HSI, and after many logical and modest steps, ended up installing a G500 with synthetic vision, an Alpha Systems AOA, and an EDM-830 engine monitor. I loved the way the G500 worked with the two GNS-530W NAV/COM units. The EDM-830 allowed lean-of-peak operations with single-degree precision.

This upgrade path suited me well. When my family and I travel, we will explore lightly trod areas for a restaurant the locals love rather than a chain. The few times I've bought a new car, I have done painstaking research and found or ordered exactly what I wanted. I am not fond of prepackaged, one-size-fits-all things.

As it turned out, the market got me into a G58. There were very few late-model, steam gauge Barons available. My favorite, a beautiful, low-time 2005 airframe, was shackled to an owner whose heart was set on an unrealistic selling price. When that deal finally fell through, I found a fantastic G58 (N888WX). The previous owner, nearing retirement, thought it would be his last plane. He doted on it. However, his business did well beyond his expectations, and he sold the Baron to upgrade to a Mustang. Win-win.

Alex Jones and daughter Sarah.



The Baron offers a spacious nose baggage compartment.

I really didn't think anything could get better than my old Bonanza's panel, but in reality, the G1000 works much better, especially the autopilot and the overall system integration.

The GFC 700 autopilot is smoother and more capable than the KFC 225. The Flight Level Change (FLC) mode allows me to select a target altitude and an airspeed to get there. This offers flight envelope protection in all phases – stall protection in climb and overspeed protection in descent. I routinely set 130 KIAS for climb and watch the vertical speed decrease gradually as I climb. The Vertical Navigation mode took me a while to appreciate. Coming home to Chicago from the southeast, I am often cleared to cross 20 miles southeast of Joliet (JOT) VOR at 4,000 feet, a clearance which implies pilot's discretion on the descent. I can create this waypoint (JOT -20) in the flight plan page, set the target vertical speed, and the autopilot will start the descent at

the right point. The autopilot mode is annunciated at the top of the PFD, right at eye level.

There are more examples of this seamless integration. The MFD supports the GWX 68 radar display, so there's no need for another screen on the panel for that. XM weather is overlaid on the MFD map, as is traffic from the Skywatch 497 or ADS-B. There are dedicated pages for each of these functions and others in the MFD. Flight plans can be entered in a large window on the MFD, or a small window on the PFD, including airways. There is a reversionary mode so that key information from each screen is presented identically on both screens.

There are, of course, some downsides. The biggest one is that the unit has a single attitude heading reference system (AHRS) when it should have been certified with two. If that goes out, so does the attitude indicator and the autopilot. The backup AI is on the far right of the panel by the door handle. The size and location make it very difficult to use. I have had two AHRS failures since I bought the plane. Both were gradual failures, therefore not emergencies, but an actual failure would be stressful. As a workaround, I have added a Dynon D3. This is a small, self-contained AHRS and attitude indicator which mounts with a RAM suction mount on the windscreen. It is not certified as a backup but could provide excellent situational awareness in the event of an AHRS failure in IMC.

Upgrades to the G1000 are few and expensive. Updating the software and replacing the transponder to gain ADS-B compliance cost nearly $6,000. This has allowed me to keep flying IFR in 2020 and beyond but adds no new utility to the avionics considering that I already had a Skywatch 497. The system can be upgraded to the much newer NXi platform at an estimated cost of nearly $30,000. I didn't find this worthwhile, but one day I might,

and it is clear that Textron supports the avionics in the earlier models.

While this platform is 15 years old, it is still more capable than 90 percent of the GA fleet, giving me everything I need. Critics of the G1000 seem to hold it to an ideal while comparing aftermarket glass avionics only to each other. And repairs and upgrades aren't cheap, whether for a G1000 or a modular system. My Bonanza upgrade in 2012 cost $33,000. I was fortunate that I didn't have any significant interface issues, but that isn't the case for many people. And as much as I loved the Bonanza panel, the G1000 is just easier to use and more capable.

After six years of ownership, I really love the G58. The only reason I would consider a different plane is that my kids are getting bigger and our trips longer, so a higher useful load would be beneficial. Bottom line, if I had to do this again, I'd be thrilled to buy a G58. T&T

The Baron has allowed my family to travel safely around the country for years – carrying us to some of our most memorable vacations.

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What Good Looks Like

Several years ago, the Citation Jet Pilots Association's safety committee came up with the idea to produce a series of videos depicting challenges that pilots face in the cockpit. Things like engine failures on takeoff in mountainous terrain, circling approaches and landing on contaminated runways. We mused that if we could show less than admirable techniques followed by the "right way" to do things, we could model safer behavior.

For some unexplained reason, I was nominated to be the model for bad decision-making. The vote was unanimous. Go figure.

What was also unanimous was the name of the person to demonstrate "What Good Looks Like." Meet Neil Singer, CJP safety consultant, Master Instructor, corporate Bombardier Challenger captain, and designated examiner in the Phenom 100/300 and Citation 525 series. He is also a regular contributor to the "Turbine" section of AOPA Pilot magazine.

For the past three years, Neil and I, along with astronaut Charlie Precourt, have produced almost two dozen videos on various topics, all of which are available free of charge. Our goal is to put the average pilot (played by yours truly) in challenging situations followed by Neil, who calmly and professionally shows you a safer alternative, with Charlie relating his NASA experiences.

Neil is one of those pilots you want to be. He takes his profession incredibly seriously. He not only knows the answers to my most trivial questions, he researches the topic and prepares an in-depth analysis for review. I thought you might enjoy some of his wisdom with the interview below.

Tell us about your "for hire" experience.

Several flight schools, including one in Hawaii, which was also a VFR-only Part 135 tour company. Another Part 135 job co-flying Piper Cheyennes for charter, organ flights and air ambulance. Then I joined American Eagle. I flew a Saab 340 prop for two years, but 9/11 hit right when I was supposed to upgrade to Captain, so I switched to the Embraer RJ since I would be right seat for a while. I flew that for 2.5 years then left to teach full time in 2004 and never looked back!

In your role as an examiner and mentor, what are the most common shortcomings you see?

Airspeed management/flying deliberate airspeeds; automation management (especially checking the status bar); knowing all the little gotchas with avionics; having profiles memorized (probably the biggest!); checklist discipline/cutting corners.

For those transitioning to higher performance aircraft, what should they do to become a safer pilot?

Understand there's no one magic "hard" thing to master, but a thousand "easy" things that can get overwhelming in volume. There's no shortcutting brute force repetition and studying. Realize you should never stop learning. As one instructor says, "When you think you've finished learning, you have."

Also, be aware that the modern upgrade process is perhaps unrealistically compressed – a high-performance piston into a single-pilot light jet, for example. Twenty years ago, the path would be 172, 182, Bonanza, Baron, King Air, then with thousands of hours, finally a 501/CJ. Now it's Cirrus SR22 into Citation 510 or M2. While certainly doable with good training, this needs to be approached with caution steps forward in expanding the envelope. Embrace SOPs (like CJP's). Just because Part 91 says you can doesn't mean you should.

Any surprises in your training experience?

Yes, often. I tell everyone I cannot forecast how quickly someone will adapt to their first light jet until we've flown for a while. I've had former fighter pilots who were currently flying heavy biz jets struggle with single-pilot ops. I've had high-time commercial pilots struggle with glass cockpits. And on the opposite side, I've had 500-hour prodigies master everything on the first try – you just never know. But I am always surprised that no one ever believes me when I say you simply cannot overstudy profiles! No matter how much I emphasize it, pilots always say at the end, "I wish I'd studied profiles more."

Talk about your involvement with the "What Good Looks Like" video series.

I love the idea of taking lessons learned from my years of teaching, insights from the light jet accident record, and stories of our friends and members, and distilling them into short videos to pass that tribal knowledge along to more people. So much knowledge at the jet level isn't widely disseminated, and I'd like to change that.

Neil Singer is indeed "What Good Looks Like." For access to CJP's free safety content, visit citationjetpilots.com and click on the "Safety" tab.

Fly safe. T&T

David Miller *has owned and flown a variety of aircraft from light twins to midsize jets for more than 50 years. With 6,000 plus hours in his logbook, David is the Director of Programs and Safety Education for the Citation Jet Pilot's Safety Foundation. You can contact David at* **davidmiller1@sbcglobal.net**.

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