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VOLUME 22 NUMBER 11



An Inside Look into Airpark Living

2018 Holiday Gift Guide

Journey to the Ends of the Earth

Stability Distribution

The Little Things About Big Engines

Five on the Fly: Jan McKenzie



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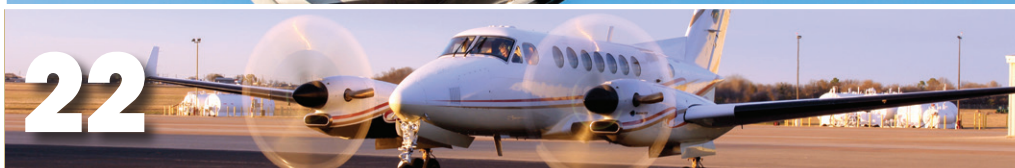
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TEXTRON AVIATION

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editor's briefing

by Rebecca Groom Jacobs



From a J-3 to T&T



Touching down after my solo in a Piper J-3 Cub.

In my introductory Editor's Briefing in June, I mentioned that my flight training was "unconventional." I attribute that description to several factors, but the most notable of them was this: I had no intention of learning to fly in the first place. Flashing back to 2010: I was an animal science major, halfway through my degree at Oklahoma State University. Raised in and around general aviation aircraft, I undoubtedly enjoyed flying, but the idea of actually piloting was intimidating and not at all a part of my plan.

While home for summer break, my best friend and I decided to apply for jobs at the new local airport restaurant together. I was familiar with the up-and-coming airpark, Stearman Field (featured in our cover story, page 8) as it was where my father stored his Bonanza while we lived in Wichita.

A week later, I was offered the waitress position I applied for. But then another offer came I was in no way expecting – flight lessons.

Airport owner and family friend Dwayne Clemens wanted to teach me to fly. For fun. A proposal unheard of nowadays. But lucky for me, Dwayne is not known for being conventional. I will never forget the big grin on his face when he plopped down in front of me as I filled out paperwork in the restaurant and said, "Let's teach you to fly in the Cub and surprise your Dad." A true jaw-dropping moment if I have ever had one. Needless to say, there was no turning him down. I began flying the next week.

At first, we flew two-a-days, avoiding the relentless Kansas heat and wind with a flight at 6 a.m. and one in the evening. I practiced taxiing, stalls, steep turns, slow flight, and takeoffs and landings on the airport's grass runway. The light handling and simplicity of the Cub's controls and maneuverability astonished me. No complex buttons, knobs or radio posed intimidation. I had only the feel of the airplane and its basic instruments: tachometer, altimeter, airspeed, compass, oil temperature, and oil pressure. Quick regular scans of the panel and then my eyes went back outside (a fundamental lesson I am eternally grateful for in today's world of glass panels).

On the fourth day, Dwayne and I were wrapping up the evening with touch and goes. After completing three smooth landings, we were on downwind for a full stop when he asked how I felt about soloing. Butterflies instantly fluttered in my stomach. Was I ready? Although it had only been four days, I had built up eight hours in my logbook. I felt comfortable with the airplane. And *it would* be cool to solo on my father's birthday...yes, I was ready. (It would not be until afterward that I realized soloing that quickly was not the norm – especially in a Piper J-3 Cub).

One magnificent go-around later, I made an unforgettable phone call to my father and sister (who were in Florida and clueless to my recent flying activity) with the news. I was met with a resounding, "WHAT," followed by nervous laughter. This reaction was the first clue I might have accomplished something a bit untraditional. But once the shock subsided and words came back to him, my father congratulated me, asked questions and spoke to how proud he felt. Next, he demanded to speak with Dwayne and promptly requested no more solos for at least another 10 hours. We obliged.

Incredibly, it would be Dwayne's spontaneous idea and one amazing summer that would completely alter my career path and lead me to where I am today. I returned to college that fall with my pilot's license in hand and changed my major to marketing. I had a new mission: join my father and sister in the business aviation world. As it turns out, it was one of the best decisions I ever made.

Rebecca Jacobs

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In the Aftermath of a Hurricane, General Aviation Delivers Hope

Operation Airdrop leverages its grass-roots network of GA pilots to solve “week one” problems after a natural disaster.



Ken Malvey's TBM 850 arrives at Lumberton, NC with supplies.

A plane, a pilot's license, fuel and a willingness to drop everything to help people desperately in need. That was the genesis for one of the most effective and responsive relief efforts ever conceived in the face of a natural disaster.

Operation Airdrop is a grass-roots charity co-founded by Doug Jackson and John Clay Wolfe in the aftermath of Hurricane Harvey, the destructive 2017 storm that inundated Houston with 40 inches of rain over four days. They started a Facebook group as a way to organize volunteer owner-pilots to deliver essential supplies to disaster zones in hours, rather than days. As previous disasters have repeatedly demonstrated, government bureaucracy and large-charity machinery tend to react slowly. Operation Airdrop was set up to start delivering supplies within hours.

It didn't take long for word to spread to pilots around the country, including Kansas City-based owner-pilot Ken Malvey, who owns a TBM 850 single-engine turboprop.

“I was impressed by the way a couple of guys in Texas saw a desperate need to get supplies into areas cut off by flooding and by sheer force of will, they pulled together the logistical and ground support necessary to allow GA pilots to safely and effectively fly supplies into airports in affected areas. I found out about Operation Airdrop too late to help in Houston, but when Hurricane Irma hit Florida not long after Harvey, I reached out to Operation Airdrop and signed up with them to volunteer my services and my plane.”

After flying missions in Florida in the aftermath of Irma, Malvey was impressed by the operation and touched by the very tangible impact that the GA community was able to make.



Ken and Joanna Malvey celebrate their 26th anniversary while flying missions in the aftermath of Hurricane Florence for Operation Airdrop.

"Operation Airdrop is made up of very driven people who are passionate about helping others, even if they have to move mountains to do so. And they are not burdened by the types of bureaucracy, red tape or authorizations that government relief agencies, and to a lesser extent other very large charitable organizations have to navigate. Speed is critical in natural disaster situations, and these smaller, entrepreneurial, grass-roots organizations are simply able to mobilize and execute extremely quickly," he said.

In September, Hurricane Florence left a path of devastation as the slow-moving Category 1 hurricane dumped more than 30 inches of rain across the Carolinas. The result was severe flooding that cut off entire communities from emergency services and much-needed supplies. While FEMA, the Red Cross, and law enforcement mobilized, Operation Airdrop aircraft were already in the air. Volunteer pilots flew 520 missions delivering more than 284,000 pounds of supplies.

At the Raleigh-Durham Airport, TAC Air donated the use of their new FBO building, which served as the logistical and supply hub for the effort. Along with dozens of other owner-pilots, Malvey flew supplies into the communities of Wilmington, Cape Fear, Lumberton, and Laurenberg-Maxton. Over the course of five-and-a-half days, he flew 10 missions totaling 10,000 pounds. "My typical load consisted of bottled water, dried food, canned food, baby formula, diapers, clothes, blankets, tarps, chainsaws, paper towels, toilet paper, cleaning and disinfecting supplies, batteries, and anything else you can imagine that would be critical to people in a flooded area cut off from outside supplies," he said. "I also flew a plane-load of chef-prepared hot meals into Laurenberg-Maxton one night."

For Malvey, the TBM 850 was the perfect platform for the mission. "In about 10 minutes and without any tools, I can remove the four cabin seats and the carpeting. For a six-seat, single-engine turboprop known more for its speed and comfort, the TBM becomes a surprisingly effective cargo hauler. In this configuration, my TBM has a useful load in excess of 4,000 pounds. Given the relatively short legs from Raleigh Durham to the impacted areas, that translated to more than 1,200 pounds of cargo capacity with my wife and I on board and sufficient fuel for the round trip plus comfortable 1-hour reserves."

When asked why he felt it was important for him to participate in Operation Airdrop, Malvey said, "We all have a



Hurricane Florence caused devastating floods that cut off entire communities.

responsibility to help out those in need in whatever ways we are each best able. I love to fly; it's a passion of mine. And I'm blessed to have the resources to be able to own and fly my own plane. Anytime I can do something I love while helping out others in need, well, that's a win-win.

"And, aside from just being the right thing to do, I think our willingness and ability to help in this way does have a meaningful impact on public impressions of general aviation and of the importance of their local municipal airport during natural disasters. I don't think we'll see any city councils in towns along the Carolina coast voting to close their local airport for at least a generation."

In today's cultural and political climate, the news and social media are filled with divisiveness and ugliness. However, Malvey said his participation in the relief efforts in the Carolinas reminded him of the good in people. "It's amazing how in times of calamity strangers of all different races, religions, colors, and political preference can come together with a singular, united determination to help complete strangers. It's awe-inspiring and extraordinarily uplifting. And, for those of us pilots actually delivering the supplies to those in need, the hugs, thank-yous, and sometimes tears are priceless.

"There's nothing more rewarding than giving hope to the hopeless."

For more information on Operation Airdrop and how you can help, find them on Facebook at www.facebook.com/groups/operationairdrop/ or visit: www.operation-airdrop.com 

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Airpark Living

by Grant Boyd

Owning a personal aircraft affords operators an immense amount of flexibility, freedom, and time-savings – the type of which non-aviators can only imagine. However, a select few owners take the sum of those benefits to the next level: living with their aircraft. Their commute time from coffee in the kitchen to removing the control locks is limited to a short walk right outside their door. These lucky few are airpark residents.



PHOTO COURTESY OF ELIZABETH CLEMENS

An inside look into some of the country's most popular, developing airparks.

According to the online directory Living With Your Plane, there are now more than 400 residential airparks across the United States, many of which can accommodate and cater to the class of pilot that own twin and turbine aircraft. To gain a better understanding of what airpark living truly looks like, we visited with four airparks from around the country: Alpine Airpark (Wyoming), Big South Fork Airpark (Tennessee), Stearman Field (Kansas) and Heaven's Landing (Georgia).

Alpine Airpark (46U): Alpine, WY

Swiftly ascending to what many consider a "perfect airpark," Alpine Airpark has come a long way in 13 years. Founder Bill Wiemann, a real estate developer, first flew into the western-Wyoming airport that borders Idaho one year before purchasing the land (it is now communally owned by the residents). At that time, the airport consisted of a crushed gravel, private runway just 20 feet wide. Since then, the property has undergone a flurry of improvements including the expansion of its runway to a generous 5,827 feet of asphalt (70 feet in width) and the addition of a GPS approach and a new FBO.

The runway is impressive in itself for an airpark, but what sets it apart is the approach. Alpine Airpark is situated 5,637 feet above sea level amongst the Palisades Reservoir and the Snake River. During the approach, pilots can see the Tetons



as well as the vast, untapped Wyoming bush. The proximity to unbridled nature allows the local homeowners to enjoy their R&R in some of the highest rated scenery in the country. Residents and visitors (rental homes are also available) enjoy year-round outdoor activities from fly fishing and whitewater rafting to snowmobiling (the area is ranked number two in the world for this winter activity). The airport's website showcases some of the recreational opportunities and beauty that the location has to offer.

"Our website is a good preview, but we frequently have visitors claim that Alpine Airpark is all the more impressive in person," said Wiemann, who now serves as an associate broker.

Residents can speak to this “seeing is believing” facet of the airpark, as they enjoy not only breathtaking scenery and fair weather, but a quiet, gated neighborhood with friendly neighbors who live and breathe aviation. The community boasts several of Wyoming’s “top homes.” And if any interested buyers do not find their design tastes met by the already-existing houses for sale, there are still lots available to build dream homes, with about 17 free spaces left in the development. If the past few months have been any indication of the future demand, potential residents will be racing to snatch those remaining spots.

For more information, visit www.alpineairpark.com.

Big South Fork Airpark (KSCX): Oneida, TN

Positioned on 125,000 picturesque acres in the Big South Fork National River and Recreation Area, Big South Fork Airpark is “an outdoor enthusiast’s dream” according to Bill Armstrong, one of the developers of the airpark. The scenic landscape offers forests, gorges, and sandstone bluffs, and allows residents to enjoy activities including camping, hunting and hiking right in their backyards.



One of the more unique features of the airpark is that it is co-branded as an equestrian community. “The Stables” is an onsite upscale boarding facility, located at the north end of the airpark on a stunning 50-acre site designed with both horse and rider in mind. The equestrian community boasts almost 400 acres of trails, which is complemented by an additional 180 miles of trails in the adjacent Big South Fork National River and Recreational Area (NRR).

But for those readers who “ride” other Mustangs, there is plenty of “stable room” for a wide variety of aircraft. Unique to other airparks, Big South Fork Airpark does not have its own runway but rather is attached to a public airport, the Scott Municipal Airport. This presents some advantages as owners are not charged for runway upkeep and are not subject to any resulting liability costs. This is coupled with 24-hour fuel (including a Jet-A truck), three instrument approaches, an FBO, maintenance services and a 5,500' x 75' asphalt runway.

Residents who elect to build homes can choose from one-to four-acre lots, with either direct taxiway access (low \$100,000's)

or without direct access (high \$100,000's). There are tradeoffs for each, but each lot promises superb views and a great community atmosphere. Currently, there are 60 home sites sold, and 35 developed lots for sale (around 45 lots await development).

Dr. Lamar Parker, a Cessna 414A owner and 10-year resident, lists a number of factors that led him to choose Big South Fork Airpark over other airport residences including excellent neighbors, reasonable HOA costs and gated access to a municipal airport. He also adds that KSCX being an “IFR airport,” with its two GPS approaches and one VOR approach, was another important factor in his decision. A bonus, the airpark’s county (Scott County) does not levy property tax on airplanes.

For more information, visit www.bsfaairport.com.

Stearman Field (1K1): Benton, KS

Situated 10 miles outside of Wichita, Kansas, Stearman Field borders the aviation-centric city known as the “Air Capital of the World.” What was originally a small-town airport that saw occasional traffic from the main airport (ICT), has since developed into a true Midwest-destination with its 35-plus homes (and growing) and an on-field restaurant that regularly hosts a variety of fly-ins and car shows.

The airport is characterized most by the almost dozen Stearman biplanes that call the 5,106 foot runway home (hence the name, Stearman Field). In addition to the WWII trainers, there are nearly 250 aircraft based on the field. Traffic far exceeds that number on the weekends when pilots flock to the airport for their taste of the Stearman Field \$100 hamburger.



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The restaurant has continually expanded since opening in 2010, and now features a huge outdoor patio area just feet from the ramp and runway where diners and onlookers often experience an impromptu “air show.” During scheduled special events, like the annual Fly-In and Car Show, the patio doubles as a concert venue; the adjacent ramp filled with vintage aircraft and classic cars. These events attract hundreds of local residents from the surrounding areas – a bonus that contributes to awareness of the joy behind private aviation.

On the south end of the runway (which is lighted and offers a GPS approach), luxurious hangar homes can be found in the gated Stearman Estates. Lots vary from one to two acres, with all properties having runway access. In addition to these homes, on the opposite side of the runway, there are numerous “hangar condos” perfect for those who wish to have living quarters alongside their airplane, but less property maintenance.

For those requiring only hangar space, there are also dozens of hangars lining the runway, often with doors open and neighbors socializing among their aircraft.

“The passion that this community has for aviation is evident and contagious,” said Dwayne Clemens, owner of Stearman Field. “It’s fun to see that passion shared with those who visit for a meal or a fly-in. They can view aviation in a much closer capacity than other airports. Kids are especially enthralled by the planes taking off and landing, just feet away.”

For more information, visit www.stearmanestates.com.

Heaven's Landing (GE99): Clayton, GA

Situated in Rabun County, Georgia “where spring spends the summer,” Heaven's Landing is a 635-acre airpark surrounded by sweeping, mountainous national forest. While a relatively new development (circa 2001), the community has quickly become a shining example of aviation and recreation.



Mike Ciochetti, owner and developer of Heaven's Landing, sells the location as more than an airpark but rather as a “life-style.” Residents and visitors enjoy hiking, biking, horseback riding, boating, fishing, whitewater rafting and hunting within the immediate vicinity. Furthermore, the airpark's 13,000-square-foot community clubhouse offers a myriad of entertainment options – from indoor racquetball and a sizeable fitness center to saunas, dining, and a forthcoming outdoor swimming pool.

And if Heaven's Landing residents feel the need to trade out mountains for palm trees, they have the option to stay at The Grand Isles Resort on Great Exuma (Bahamas) at a highly discounted rate. It's typical for groups of residents to fly down to the resort together several times throughout the year. Greg Sheets, a resident who owns and operates a King Air F90 and Mooney, raves about the community.

“The Heaven's Landing lifestyle and location not only offers great outdoor activities like hiking, fishing, and camping but also a community of fellow owners and folks from town.” He also adds that Lake Burton, located just five miles from Heaven's Landing, is a huge plus, and he and his wife frequently enjoy the lake with fellow airpark residents.

With so much to do outside of flying, it could be easy for some residents and visitors to forget that they are in an airpark community, but aviation is still at the forefront. With a 5,200-foot lighted concrete runway, anything from a Piper Cub to a Falcon 50 safely operates in and out of the field.

More than 135 lots have sold in the development, with six approvals for new home construction recently issued. At full capacity, the master plan calls for 300-plus home sites that will line the lush rolling terrain. Depending on the views, taxiway access and terrain, the one-and-a-half acre lots at Heaven's Landing range from \$120,000 to \$320,000 in price, with mountain-top views representing the premium end of this price spectrum.



Because of the mountainous terrain at Heaven's Landing, not all the lots have direct taxiway access. For those property owners without direct access, Heaven's Landing has built an incredible hangar complex, centrally located within the development.

Mountain views, an incredible range of activities, large private hangars, runway access at home and a fuel farm that features both 100LL and Jet A? Sounds like heaven.

For more information, visit www.heavenslanding.com. 

Grant Boyd is a recent marketing graduate of Wichita State University. A private pilot, Boyd is currently working toward his instrument rating and MBA, with the ultimate goal of combining his love of business and aviation with a career at a general aviation manufacturer. You can contact Grant at grantboyd2015@gmail.com.

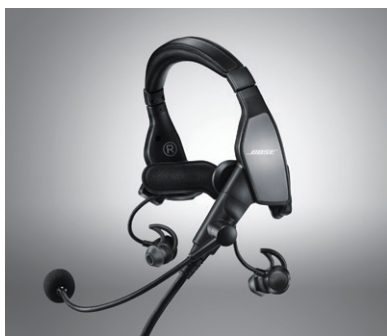
2018 Holiday Gift Guide

by Rebecca Groom Jacobs

'Tis the season for pilot gatherings, gadgets, and gifts.

Garmin D2 Delta Aviator Watch (\$899.00-1,249.00)

Garmin's newest and smaller-sized family of GPS aviator watches, the D2 Delta series, offers aviators new levels of capability and connectivity such as dynamic color mapping, NEXRAD weather, automatic flight logging, alerts for course deviations, pattern altitudes and more. Pilots can synchronize their watch with their avionics for enhanced GPS navigation and mapping data. With advanced aviation and sport watch functions, these sleek new designs – available in three sizes – accent any style while helping navigate the day. These watches also include handy features such as storage for up to 500 songs and our Garmin Pay contactless payment solution. For more information, visit www.garmin.com.



Bose ProFlight Headset (\$995.95)

Released earlier this year, the Bose ProFlight is the smallest aviation headset Bose has ever produced (4.9 ounces compared to approximately 12 ounces for the Bose A20 headset) and is best suited for lower noise cockpits found in turboprop and turbine aircraft. New features include three user selectable levels of noise cancellation, a unique tap control for talk-through communication and quick release, side-swappable boom microphone, and down cable – all engineered into a stable, in-ear configuration. The new Bose ProFlight is FAA TSO and EASA E/TSO-C139a certified. For more information, visit www.bose.com.



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The Stratus 3 by Appareo is the latest generation of the company's weather receiver. The everyday cockpit companion offers subscription-free weather, ADS-B traffic, backup attitude, and GPS position right to a tablet. New features include auto shutoff, smart WiFi, open ADS-B, new ADS-B products, synthetic vision traffic display, and a two-year warranty. Stratus has accumulated millions of flight hours in everything from the Piper Cub to military fighters, and now it's smarter than ever. For more information, visit www.appareo.com.



Garmin VIRB Ultra 30 with Aviation Kit (\$499.00)

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Jet Shades was born. Jet Shades are the only anti-glare, anti-heat, removable window panels that entirely fill the cockpit side windows. Jet Shades reduce heat, reduce instrument glare (lessening eye strain), and protect pilots from harmful UV rays. For more information, visit www.jet-shades.com.

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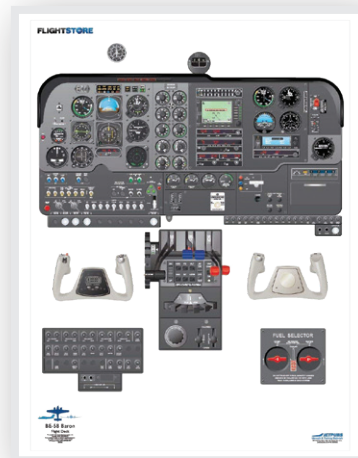
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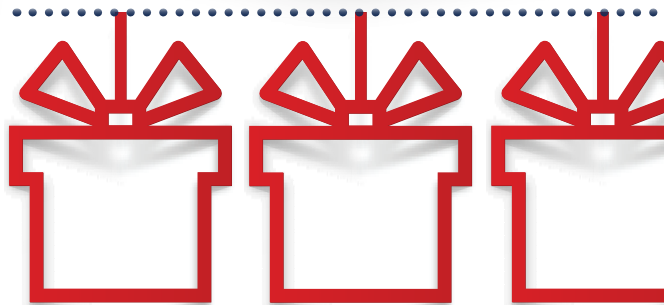
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Journey to the Ends of the Earth

*Follow along on a 90-day solo circumnavigation
from the South Pole to the North Pole.*

by Robert DeLaurentis

If you were to assume that planes have a purpose far greater than just flying, what would you do with your plane? Would you use it as a global billboard? Raise money for aspiring pilots? Educate kids about STEM? Showcase aviation safety and technology? What about a spiritual practice to better understand yourself and life?

I decided to do all these things and more. After my first circumnavigation in my Malibu Mirage in 2015 and then completing my second book about the trip (*"Zen Pilot: Flight of Passion and the Journey Within"*), I sought another adventure. Soon, a piece of research I came across from the British Antarctic Survey planted a seed.

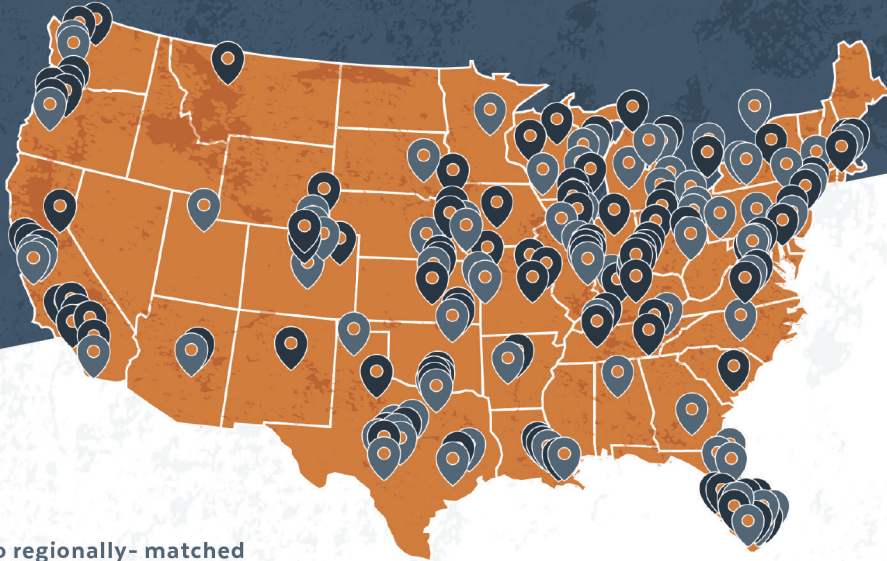
There are few places in the world where there has never been war, where the environment is fully protected and where scientific research has priority. But there is a whole continent like this – it's the land the Antarctic Treaty parties call...a natural reserve, devoted to peace and science.

This seed, along with the experience from my 2015 circumnavigation, developed into a new mission: Join humanity together in a South Pole to North Pole flying adventure.

To achieve this goal, I purchased a 1983 Gulfstream Turbine Commander 900 ("Citizen of the World"). Breathing new life into this capable and venerable 35-year-old aircraft has been a challenge. The Flying Thru Life team recently installed newly refurbished Honeywell TPE 331-10 T engines producing 1157 hp designed for 1000 hp and derated to 750 on takeoff. To make the aircraft climb faster and fly farther, new custom MT five-bladed nickel-tipped composite scimitar propellers were

IT'S TIME TO GIVE HALF A WHOLE LOT OF THOUGHT.

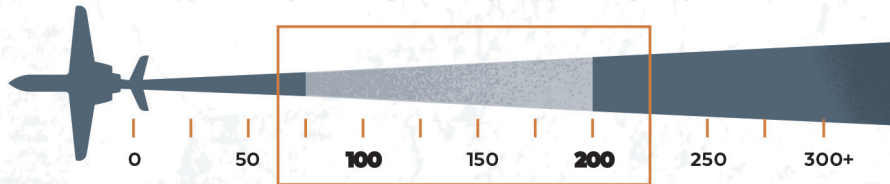
PIA Managed Co-Ownership is on the Map - *You Should be Too.*



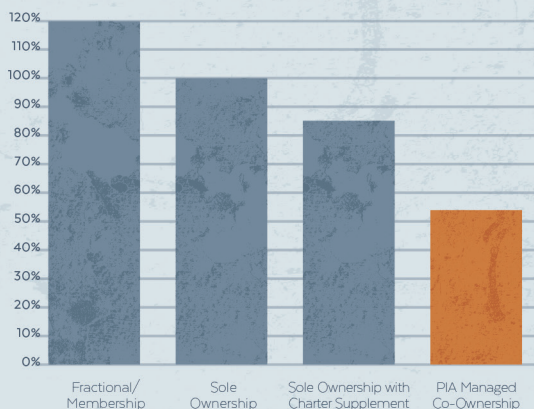
Bringing together two regionally- matched operators to split the acquisition and operating cost of the airplane they choose, PIA provides the match and the structure that allows operators in this segment the lowest cost of ownership - with access that rivals whole ownership.

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Approximately how many hours do you expect to fly in a year?



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designed and installed, incorporating the latest low vibration and quiet prop technology. Add RVSM, and at 35,000 feet, the Citizen of the World will likely be the fastest Turbine Commander on the planet.

To increase the range to a seemingly impossible 5,000 nautical miles and 20-plus hours of flight time, I located the original engineer who designed the 52-foot Gulfstream wing and asked him to conduct a feasibility study. After a lot of number crunching, the engineer determined the plane could carry an extra 928 gallons of Jet A in six additional fuel tanks. This extra fuel gets the plane to an incredible 40 percent over max gross.

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This is an enormously big task that has never been completed in a twin-engine turboprop. The Citizen of

the World will be setting records over both the South Pole and the North Pole for speed and distance in the C-1e and C-1f classes. If you ask me, I'll tell you there are aspects of this trip that scare me. These areas have limited air traffic control and some of the worst weather in the world. But fear isn't a good enough reason not to go. There is so much good coming along for the ride.

If you would like to support our mission or follow along, I invite you to visit www.poletopoleflight.com or find "Flying Thru Life" on social media. **T&T**

Robert DeLaurentis is an author, speaker, pilot, real estate entrepreneur, philanthropist, and Navy Gulf War Veteran. He is the author of "Flying Thru Life" and "Zen Pilot." Robert can be reached at robert@flyingthru-life.com.



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Stability Distribution

by Thomas P. Turner

One of the unique aspects of flying twin-engine and turbine airplanes is the wide range of operating weights. Even more important, utilizing more or less of this loading capability means there is potentially a much wider range of centers of gravity compared to smaller aircraft. Changes in CG location create differences in control feel, airplane performance and handling – all reflecting changes in airplane stability. This aspect of flying larger airplanes is not always explored in-depth during transition and recurrent training. Let's look at the differences in CG-related stability distribution.

Relative Characteristics

An airplane loaded toward the forward edge of its weight and balance envelope, compared to an airplane loaded further aft, will:

- be very stable in pitch;
- tend to fly at a lower angle of attack, developing less lift;
- have higher breakout forces, requiring more control force to change its pitch attitude.

Even within the approved envelope, compared to a more forward CG condition for any given indicated airspeed an aft-loaded airplane will:

- tend to pitch upward more;
- tend to fly at a higher angle of attack, unless the pilot resists the pitch-up;
- be less stable in pitch (tend to nose up and down, and not maintain a given attitude);
- have lower breakout forces. It will take less force on the elevator to change the pitch attitude, or conversely, respond more dramatically to the same amount of control input.

The FAA's *Pilot's Handbook of Aeronautical Knowledge*, page 5-43, tells us:

The rearward CG limit of an aircraft is determined largely by considerations of stability. The original airworthiness requirements for a type certificate specify that an aircraft in flight at a certain speed dampens out the vertical displacement of the nose within a certain number of oscillations. An aircraft loaded too far rearward may not do this. Instead, when the nose is momentarily pulled up, it may alternately climb and dive becoming steeper with each oscillation. This instability is not only uncomfortable to occupants, but it could even become dangerous by making the aircraft unmanageable under certain conditions.

A heavily loaded airplane is usually loaded further toward the aft end of the envelope than many pilots are used to. Passengers and baggage that make up the extra weight that drives the gross weight upward are usually added to the aft part of the cabin, moving the center of gravity toward the aft end of the weight and balance envelope. In some airplanes, the CG moves rearward as fuel is burned; in some types, the CG change is negligible, while in others the CG may actually move forward under some conditions. This is the sort of type-specific knowledge you should have learned when you transitioned into the airplane. If you don't know the characteristics of the airplane you fly, now's the time to figure it out.

Taking Off

Center of gravity distribution can have a significant impact on takeoff handling and performance. If the CG is forward, it will take more control force to establish the liftoff and initial climb attitudes. Give the controls the input you'd do at farther aft loads, and the airplane won't climb as it should. The increase in control deflection necessary to overcome the breakout forces, and the higher angle of attack for a given pitch attitude that results, increase drag, increase the ground roll distance and reduce the initial climb rate.

If the CG is toward the rear of the envelope, the controls will be lighter. The airplane will tend to over-rotate and pitch up excessively, increasing angle of attack and making a takeoff stall more likely. The airplane will lift off sooner and climb faster, but only if the pilot puts more subtle effort into flying the proper pitch attitudes.

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Landing

When landing, the forward-loaded airplane will require more control force to flare. Fail to give it the input it needs, and you risk landing hard on the nosewheel, making directional control on the runway difficult and possibly overloading the gear to the point of failure.

The more critical – and typical – situation is when the airplane is loaded toward the aft end of its envelope. If the pilot applies the same amount of aft elevator control he/she is conditioned to add, the result will be a greater nose-up pitch and a higher angle of attack. The airplane will tend to flare high; it may stall and “drop in” for a hard landing.

Such a flare often results in one of three outcomes:

1. The airplane hits hard on the main landing gear, possibly blowing the tires or damaging the gear and causing the airplane to go out of control on the runway.
2. The stall occurs high enough above the ground that the nose drops far enough the nose gear hits the ground first. The nose gear collapses, and the pilot may or may not lose directional control.
3. Either attempting to correct for the stall or after initial impact with the ground, the pilot enters a PIO (Pilot-Induced Oscillation) that is exacerbated by the stability effects of aft CG and quickly increases in amplitude

until the nose gear collapses or the pilot loses directional control.

To be sure, wing and power loading have an impact on airplane stability, performance, and control. But within the weight range even of twin and turbine-powered airplanes, the changes that result from the center of gravity location are even greater.

Stability Training

Most flight training occurs with two persons on board and somewhere between half-full and full fuel tanks. Unless you're in a much smaller airplane, this is a fairly lightweight and the center of gravity is near the forward edge of the envelope. Consequently, your experience with takeoffs, landings, go-arounds, stalls and other high-angle of attack maneuvers is usually under the best conditions of stability and handling your aircraft can provide. If the airplane has a high useful load or a wide center of gravity range, the airplane's stability and control response in common accident scenarios may be very different than what you encounter in training.

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Very frequently hard landings and airport-environment Loss of Control – In-flight (LOC-I) involve a heavily loaded airplane or one in which the CG is toward the aft end of the envelope. Your conditioned response to these scenarios, reinforced in practice and instruction, may not be adequate for recovery from performance excursions under these conditions.


Perhaps we should all carefully load our aircraft near the aft end of its CG envelope at the airplane's maximum weight, and with an instructor experienced and current in that type of airplane go up and practice slow flight, stalls, go-arounds, and high performance (short- and soft-field) takeoffs and landings in this condition. If your airplane is one that has a large rearward movement of the center of gravity with fuel burn, you might also practice these maneuvers at lighter weights but with the CG near the aft limit.

Performing this exercise does three things for you:

1. It refreshes you on the process of computing aircraft weight and balance, whether manually or by use of a loading app or other automated system. My experience is that very few pilots feel confident in making a loading calculation. This suggests that they rarely do so and are less likely to know when their airplane is loaded at the edges of the envelope – or even outside it.
2. You'll gain an appreciation for the changes in airplane stability, performance and handling across its entire range of approved loading.
3. You'll be better practiced and ready for a high-performance takeoff and landing, go-arounds and stall recoveries in conditions more typical of the way you routinely fly your airplane...conditions less represented by the way you've been trained and evaluated on these skills.

Ask your instructor to help you train for common LOC-I scenarios and to avoid takeoff and landing crashes, by experiencing them at weights and load distributions more typical of how you fly the airplane. It might be a good focus of your next Flight Review or training event. One of the greatest capabilities of Flight Training Devices and flight simulators is their ability to mimic the airplane's

performance at varying weights and center of gravity locations. If you're not augmenting your flight training with simulation, you're missing a great opportunity. If you do attend simulator training, ask your instructor to let you experience normal and emergency scenarios at a wide range of weights and CG locations.

Think of changes in center of gravity location as the airplane's stability distribution. Learn and consider the characteristics of the airplanes you fly across their entire CG range. 

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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The Little Things About Big Engines

There's no substitute for horsepower.

by Joe Casey

Truer words have never been spoken. If you want speed, you need the engine that develops the greatest horsepower. Why? Try as you must, nothing will replace having more horses under the hood – not even leverage. You can move the world with a long lever, but you can't move it far. Aerodynamic efficiency helps, but not enough to move the needle appreciably. Shrinking the size of the tube going through the sky isn't feasible. So, if you want to go fast (and what twin and turbine owner doesn't, right?), there's simply no substitute for horsepower.

I've had the pleasure of flying every King Air version over the years, having managed (and flown) a C90, 200, B100 and a 300/350 for the last decade. I fly all the versions during training or on ferry flights each year. I'm a huge King Air fan. Which is my favorite? No doubt about it, the King Air 300 is the clear winner. Why? It has the biggest engines mounted on the same fuselage as the King Air 200, and it flat-out performs.

I can load up full fuel, put a person in every seat, fill the luggage compartment with everything that comes out of an over-loaded suburban, roll a surprisingly short distance down the runway and climb out at better than 2,500 fpm on a standard day. It is simply an amazing machine, and that is because it has the biggest PT6 that Beechcraft could figure out how to bolt on the airframe. The King Air 300/350 is the true Ferrari of the King Air world, undoubtedly due to its power.

But wait...there's something even better than the 300/350?

Blackhawk Modifications, based in my home state of Texas, has built an entire business around the knowledge that horsepower is irreplaceable. They've figured out how to remove big engines from great airframes and up the ante by upping the horsepower even higher. Owners can now upgrade to the XP-67A engine and make their King Air 350 climb quicker, cruise faster and look

cooler. I suspect the XP-67A STC for the King Air 350 will be very successful as the years go on. Why? Well, you know the answer already – there's no substitute for horsepower.

If buying or selling an airplane, the biggest engine variant will always demand the premium price seeing as the market loves horsepower too. In the MU2 world, the Marquise and Solitaire will always outsell the other variants because they have the biggest engines. Similarly, the King Air 90 with the biggest engine will sell first. Piper Aircraft moved from the 310 hp Malibu to the 350 hp Mirage for the benefits of horsepower. More horsepower equates to more demand.

And, when the chips are down with that unexpected engine anomaly on one side, you want the good side having horsepower in reserve. My biggest argument against low-power multi-engine airplanes is the lesser performance when an engine emergency occurs. Would you rather have an engine failure at night in bad weather over inhospitable terrain with icing at MGW in a King Air F90 or King Air A90 (with less available horsepower)? If things go awry, I want the stable with the most horses.

I get this question often when working with clients who want to buy a PA46: "Should I get a super nice piston version or go for a turbine?" That's an easy answer for me. My answer is always, "If you can afford it, always go for the turbine." Horsepower changes the game. The Piper Mirage is a fine airplane, but it is a relative pony with an anemic climb rate that has trouble getting up the highest flight levels or handling icing

conditions. But bolt on the -35 JetPROP conversion, and you've got a true thoroughbred that'll use half the runway both in takeoff and landing, gain 1,500 fpm during climb, and cruise 50 KTAS faster. The airframe is the same, but horsepower makes all the difference.

I can vividly remember when taking my instrument rating check ride many years ago, A.L. Johnson (longtime DPE from Nacogdoches, Texas) asked me, "What determines the rate of climb?" I stumbled, hemmed and hawed, and convinced him that I only knew enough to be dangerous. My poor response prompted a good discussion that I remember to this day. The answer to A.L.'s question is, "excess horsepower." I never forgot A.L. Johnson and never forgot that question. In fact, I now ask that question during almost every checkride I administer. The amount of excess horsepower will determine the climb rate. So, when a bigger engine is mounted to an airframe, all of that additional horsepower goes directly into the rate of climb. That is why the Beechcraft Duke with a turbine Duke conversion will out-climb most jets, and the piston Duke has performance more equal to the Piper Mirage.

Is the largest engine version of an airplane right for you, or should you go for the small-engine variant?

That's an easy question to answer in a practical sense. All you have to do is lease the type of airplane you want to buy with the largest engine and then see if you can pull the power back. Most cannot do it. For example, if you are considering

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24 MITSUBISHI MU-2P
36 MITSUBISHI SOLITAIRE
567 PILATUS PC-12 NG
149 PILATUS PC-12/47
228 PIPER JETPROP
46 PIPER M500
59 PIPER M600
481 PIPER MERIDIAN
3 ROCKWELL 680T TURBO
5 ROCKWELL 680V TURBO II
5 ROCKWELL 680W TURBO II
4 ROCKWELL 681 HAWK
98 SOCATA TBM-700A
68 SOCATA TBM-700B
292 SOCATA TBM-850
102 SOCATA TBM-900
5 STARSHIP 2000A
70 TURBO COMMANDER 1000
38 TURBO COMMANDER 690
140 TURBO COMMANDER 690A
139 TURBO COMMANDER 690B
79 TURBO COMMANDER 840
24 TURBO COMMANDER 900
56 TURBO COMMANDER 980

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Owners

Count	Aircraft
37	BARON 56 TC
1433	BARON 58
2	BARON 58 PA
345	BARON 58P
108	BARON 58TC
3	BARON A56TC
321	BARON G58
188	BEECH DUKE B60
162	CESSNA 340
520	CESSNA 340A
70	CESSNA 402B
	BUSINESS LINER
133	CESSNA 402C
24	CESSNA 404 TITAN
247	CESSNA 414
357	CESSNA 414A
	CHANCELLOR
43	CESSNA 421
38	CESSNA 421A
335	CESSNA 421B
607	CESSNA 421C
53	CESSNA T303
106	PIPER 601P AEROSTAR
24	PIPER 602P AEROSTAR
442	PIPER CHIEFTAIN
314	PIPER MERIDIAN
25	PIPER MOJAVE
315	PIPER NAVAJO
13	ROCKWELL 500 SHRIKE
24	ROCKWELL 500A SHRIKE
77	ROCKWELL 500B SHRIKE
44	ROCKWELL 500S SHRIKE
5	ROCKWELL 500U SHRIKE
12	ROCKWELL 520
	COMMANDER
5	ROCKWELL 560

COMMANDER

11 ROCKWELL 560A
COMMANDER
7 ROCKWELL 560E
COMMANDER
7 ROCKWELL 560F
COMMANDER
13 ROCKWELL 680 SUPER
3 ROCKWELL 680E
14 ROCKWELL 680F
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14 ROCKWELL 680FL
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393	CESSNA P210N
21	CESSNA P210R
52	CESSNA T182
1	CESSNA T206
782	CIRRUS SR20
2920	CIRRUS SR22
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104	PIPER MATRIX
449	PIPER MIRAGE

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A King Air 350 undergoes the XP-67A engine upgrade offered by Blackhawk Modifications.

whether to buy a -21 JetPROP or a -35 JetPROP, fly in a -35 JetPROP and pull the power back to match the ITT of a -21 JetPROP. The -21 JetPROP has an ITT limit of 680F, and the -35 has an ITT limit of 740F. So, if you can fly the -35 JetPROP around with a max ITT of 680F, you'll be flying a -21 JetPROP effectively. Most pilots cannot resist the urge to push the power lever all the way forward.

This same test can be used with other airframes, too. Can't decide between a King Air F90 or a C90? Find someone who would be willing to allow you to take a test flight in an F90 and see if you have the wherewithal to pull back the power to the limits of a C90's -21 engines.

If you can do so, then you are motivated by efficiency, and you are in the elite club of owner/operators that know how to do the math.

Do math? Ouch! That hurt. Yes, there is no substitute for horsepower, but no one said that horsepower is cheap. You'll pay more to acquire any big-engine version of an airplane. You'll buy more fuel to feed the big-engine version, and every hour of operation will cost you more (engine reserve) in the big-engine version. Is it worth it? To most, yes, but it is a personal decision that has other variables in the equation, with the biggest variable being cost. Make no mistake, the bigger engine will always cost more.

So, do you buy the big-engine version of an airplane or the small-engine version of an airplane? The adage rings true, "The buyer with the most knowledge usually wins." Do your homework and learn all you can. If you still struggle to make a good decision, be sure to hire a buyer agent who has your best interests at heart. But never forget, there's no substitute for horsepower. **T&T**

Joe Casey is an FAA-DPE and an ATP, CFI, CFII (A/H), MEI, CFGI, CFIIH, as well as a U.S. Army UH-60 standardization instructor/examiner. An MMOPA Board member, he has been a PA46 instructor for 16-plus years and has accumulated 12,000-plus hours of flight time, 5,500 of which has been in the PA46. Contact Joe at: www.flycasey.com, by email at joe@flycasey.com, or by phone at 903.721.9549.



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by Rebecca Groom Jacobs

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1. Can you summarize the history and mission of the Ninety-Nines (99s)?

The organization was founded in 1929 at Curtiss Field in Long Island, New York. All 117 women pilots at the time were invited to assemble for mutual support, advancement of aviation, and to create a central office to keep files on women in aviation. In 1931, Amelia Earhart was elected the first President, and the group selected the name "Ninety-Nines" to represent the 99 charter members. Membership was then immediately opened to other women as they became licensed pilots.

Today, we are an international non-profit organization of over 5,600 licensed women pilots from 44 countries. We are pilots who teach and pilots who fly for pleasure. We are pilots who are technicians and pilots who are mechanics. But first and foremost, we are women who love to fly! Our mission is to promote the advancement of aviation through education, scholarships, and mutual support while honoring our unique history and sharing our passion for flight.

2. What led you to become involved with the organization?

I learned to fly in a 1948 Stinson when I was 21. During my flying lessons, I did not come across any other women pilots. So, when someone mentioned the 99s to me, I was eager to reach out and join. When you don't see any other pilots like yourself for a year, it is great to meet other women who enjoy flying as much as you do.

As I continued to fly over the years, I wanted to give back to this organization that has given me so much. I volunteered and was elected to Chapter, Section, and eventually positions at the international level. The giving of my time and skills for the 99s is fun. I enjoy every day that I have the opportunity to meet these incredibly accomplished women. Providing my talents is a small "thank you."

3. It is estimated women make up approximately 5 percent of the global pilot population. In your opinion, how can the industry attract more female pilots?

We need to start at the middle and high school level and introduce these young women to aviation and flying. If girls don't see women in the cockpit, they won't know that is a viable option for their future and career. So, the 99s started a new program to introduce young people (and their parents) to a flight at their local airport. The program is called "Let's Fly Now." We just recently kicked off this program and hope to expand it worldwide over the next few years.



4. When speaking with someone who has never heard of the 99s, what do you convey are the core benefits of membership?

Experience: Some mistakenly think this is a social organization for older women pilots but it is so much more! Get to know the players, and you'll find that 99s are experienced pilots of all ages and areas of aviation from jet airliners, helicopters, space shuttles, business jets, tail-draggers, air racing, soaring,

aerobatics, ballooning – you name it, and there's a 99 doing it.

Networking: The 99s consists of thousands of women pilots worldwide. We are eager to share our knowledge and experience with fellow members.

Education: The Ninety-Nines sponsor many large and small educational programs, from local chapter initiatives to public aviation safety meetings and conferences.

Friendship: Want to make friends in your new flying vocation or avocation? Meet women who share your interests.

Scholarships: From chapter awards and new pilot awards to the Amelia Earhart Memorial Scholarships for advanced pilot training and aviation education, the 99s can help achieve goals in aviation.

Understanding: Many of us have been through the same trials

and tribulations when learning to fly or achieving advanced ratings. We have figured out ways around the obstacles and can help fellow members with good ideas to move forward.

Recognition: Your victories and achievements, large and small, will get the recognition they deserve from your peer group.

Encouragement: This natural part of women sharing with women is particularly useful since we fly in what is still mostly a man's world. Find your female role models and mentors in the 99s.

Career Tips: Pilot-specific information, realistic solutions, mentoring, and career networking are just a few of the tangible rewards.

Acceptance: Being a 99s member guarantees your acceptance, regardless of your experience level. Chapters exist worldwide, and you'll find the welcome mat is always out, wherever you may land.

5. Can you describe one of your most memorable moments (or events) since joining the organization?

Traveling to 99s meetings around the world and getting to know our members create my most memorable experiences. I have met members who are astronauts and spent months on the International Space Station. I have met a world aerobatic champion. I have met a pilot who flew solo around the world in a single-engine piston plane. I have even met members of WASP who flew P51s in the 1940s. Moreover, I have gotten to know many women like me, where flying is their passion in life. **T&T**



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The Fish Box Tax

by Kevin Ware

It is salmon fishing season in Southeast Alaska, and in the far back corner of the Juneau (JNU) FBO's somewhat ratty hangar, behind a beat-up old yellow propane powered fork lift and miscellaneous trash, there sits an ancient white deep freezer. The brand name plate is long gone and there are numerous scrapes and dents that match the color of the fork lift. Not to mention, the lid has some unappealing areas of a brown dried-out fluid you really do not want to touch. But, at least the unit appears to be functioning well because I can hear its motor humming in the background.

I push the debris on the floor out of the way with my foot, take care not to trip over the fork lift's tongs and open the freezer lid. Inside, I see a pile of salmon fillets of unknown age, at one time worth a good \$50 each in the lower 48, and obviously left by some prior flight crew in their haste to depart and return to a sunnier location. I am carrying a 40-pound container any locals would immediately recognize as a "fish box." Fish boxes are about 30 inches long, 15 inches wide, and 8 inches high and are made of a wax covered, waterproof cardboard. Should any of the fishy contents melt while they are in the baggage compartment, no salty foul smelling fluid should leak into your airplane.

My fish box is going in the freezer because our departure in the Lear 40 has been delayed due to weather, and I do not want its freshly-purchased contents to thaw. The aggravating part is it is not our airplane that is causing the delay. As a Part 91 operator, there is little in the way of weather out of JNU that would prevent us from taking off, particularly over open water to the west. No, the problem is the Beaver on floats that was supposed to take off from the adjacent pond and collect our passengers at a fishing lodge in Pelican Bay (some 60 miles away) that cannot leave as long as the fog and rain persist with visibility down to a half-mile, and ceiling down to 100 feet. And, it is for this eventuality that the FBO has this old freezer.

Fellow pilot Tim and I have been in Juneau for the past two days, having flown up a group of business people for a fishing trip. For this kind of occasion, if the fishing trip does not require flying floats to some distant lodge, the pilots usually get invited along. But as this was not the case, we are spending the two days looking through the mist at the Mendenhall Glacier, and visiting the rather interesting Alaska History Museum in town (all the while trying to dodge the crowd of cruise ship passengers who flood the place).

On any trip to Alaska at this time of year, it is generally expected that the crew will return with some fresh fish for family and friends. And if the pilots were not able to go fishing themselves, there is often a kind of humorous understanding that when the passengers return with all of their fish, there will be a "fish box tax" upon



boarding. However, on this trip, not knowing how successful our passengers were going to be, we stopped by a fish wholesaler located in an industrial area near the airport to buy an assortment of the local catch, all of course packed with ice in a fish box.

The flight up to Alaska two days before was interesting. Our departure airport just north of Seattle, had 1-2 miles visibility with an indefinite ceiling due to smoke and haze from an epidemic of forest fires that extended from British Columbia down to Oregon. From FL400 on the east side of Vancouver Island, we could just barely see into the fjords and valleys due to the amount of smoke. In addition, the GPS units (on a Lear 40, there are two separate systems) kept intermittently displaying a loss of satellite signal. And the two units were not doing this simultaneously; one would show a yellow MSG sign about the loss of GPS, then later would go off and the other side on. This mild irritation continued as we descended over the Sisters Island VOR (SSR) which is the initial approach fix for the RNAV approach to Runway 08 at JNU. This was a problem because JNU was reporting 1,800 overcast with 2-mile visibility in light rain and fog, which are the minimums for the approach, and it obviously requires a good GPS signal.

After some discussion, we decided to set up the panel on the right side with the LDA approach, with its green needles as a backup, while keeping the GPS approach on the left. The problem with this is that the LDA minimums are a 3,200-foot ceiling and 4-mile visibility, meaning if the GPS went out on the approach, it would probably be an automatic go around. To cover our bets, even though it was just 1 o'clock in the afternoon, we asked the tower to turn their approach lights up high. JNU has an unusual situation in that because of mountains out to the north and east, the final approach course heading is 070, while the runway is 080, a 10-degree offset to the right. Fortunately, whatever was causing the GPS to go offline, held off during the approach and just as well, because we did not see the approach lights we asked for until the altimeter hit exactly 1,800 feet.

Now ready for the return flight, we have been lingering around the FBO for a couple of hours, while our passengers text us from their cell phones asking about the location of the float

plane. We inform them that between the layers of fog rolling in, we can see the float plane pond from the FBO and that there are a whole flock of Beavers still tied up to the dock. It does not look too hopeful. Finally, the fog lifts to barely VFR and we hear the characteristic radial engine sounds as those airplanes hastily depart to pick up their isolated passengers. We text our people that transport is on the way, and not too worry if they are late, because the Lear will not leave until they are ready. They reply that is a good thing, but other guests out at the lodge are now going to miss their scheduled Alaska Airlines departure.

Lunch time arrives with still no Beavers in sight, so we drive to a bakery near the airport well known to flight crews, grab a bite to eat and return with a large bag of fresh apple strudel. We stash it in the passenger compartment of the airplane, while also making sure the coffee container is filled and fitted into its slot. Finally, our passengers appear in the van operated by the float plane company. They have not shaved since we last saw them and are wet from standing on the dock in the rain, looking thoroughly miserable. It is clear they are anxious to get home. The van disgorges a stack of fish boxes near the airplane, and while the line crew loads them into the crowded baggage compartment, we all work to stuff the personal luggage into the cabin. When we are done, we hurriedly close the door, and get the airplane started.

While all this has been going on, the rain has increased and the fog returned, reducing visibility down to less than half-mile, with indefinite ceiling and a 6-knot wind from the east. We



have two departure options: into the wind on Runway 08, with the takeoff immediately followed by a sharp right turn in low IMC conditions back to the west to avoid the mountains on all three sides. Or to make a downwind departure on Runway 26, then go straight out over salt water to the BARLO intersection, then the SSR VOR. Obviously, we want to choose the lowest risk departure possible, but there are no clear right or wrong answers in this kind of situation – it is all a matter of pilot judgement. We look up the airplanes performance numbers and decide the lesser of evils is to depart downwind, which the tower readily allows, there being no other traffic within 100 miles. Five minutes later, we are climbing through FL180 over SSR and turn direct to Annette Island (ANN) just south of Ketchikan, and from there to the Victoria VOR (YYJ), about 700 nm to the southeast.

We had told our passengers we would be in sunlight shortly after takeoff, but that turned out to be overly optimistic. Often in Southeast Alaska, a low-pressure system over the Gulf of Alaska to the northwest will push moist air well up into the flight levels as it comes ashore over the mountainous terrain which makes up a good deal of the area. Finally, climbing through FL360 we get ourselves clear of all the cloudy mess and potential ice to see the promised sunlight. The passengers, however, are not paying any attention as they are lost in the box of fresh apple strudel and hot coffee we had boarded earlier. An hour later, we pass over Victoria, BC, set up for the GPS approach into our home airport, break out at 4,000 feet and land without a problem.

The warm cabin has dried out our passengers and having eaten their fill of strudel, they are feeling much better about life as we pull up to our home FBO's door. They energetically haul out their suitcases from the back, while the line guys start to unload the fish boxes from the baggage compartment. There are a dozen or so boxes each with blue "Fresh Alaska Fish" signage on them, and labeled with the passengers name, which they each promptly carry out their cars. Everyone departs for home, leaving one unclaimed fish box sitting on the ramp alone. Upon inspection, it has "PILOTS" written on it. Apparently the "fish box tax" is about 8 percent, and it seems to actually work. Maybe I didn't need to buy that extra fish that I left in the old freezer after all. **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.

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From the Flight Deck

by Kevin R. Dingman



Duke Meisters

The 2018 Beechcraft Duke Fly-In



[**Meister** – *compound noun* – akin to maestro – A person regarded as skilled or prominent in a specified area of activity; one who has extensive knowledge or ability.]

Aircraft type clubs are organizations that provide information and support to a single aircraft type from the same manufacturer. Most aircraft type clubs are independent of the manufacturer and organized as not-for-profit associations operated by volunteers. Such is the

case with The Duke Flyers Association (DFA) which has nearly 300 members including pilots from Switzerland, Australia, Austria, Germany, New Zealand, Belgium, South Africa, and Canada. The annual fly-in presents an opportunity to socialize with birds of a feather, renew friendships, and relate stories through heartfelt (sometimes harrowing) tales of all things aeronautical. Attendees also discuss piloting, maintenance, operational techniques, meet face-to-face with vendors, and accomplish recurrent training.

Pilot Steel, Inc.

As much a treasured social event as a technical one, this year's annual Duke Flyers Association (DFA) meeting was held in Owensboro, Kentucky (KOWB). The event was organized and hosted by Ray and Susan Assmar, owners of both a beautiful Duke and Pilot Steel, Inc., a metal fabrication company. Throughout the gathering, DFA President, retired Delta Captain and Duke guru Bob Hoffman shared pearls of wisdom gained from his 48,000-plus hours of airline and GA flying. Mid America Jet provided host FBO services for attendees which included both piston and turbine Dukes.

A Tough Crowd

The conference itinerary began with cocktails at a meet-and-greet with an evening of storytelling held at the event hotel. The official beginning of the gathering commenced the next day with an early morning, seven-hour, all-encompassing Master IFR refresher course presented by Gary Reeves. Considering that DFA members regularly fly their Dukes in the IFR system, in actual IMC and often to an IMC approach, it was a tough crowd of meisters to impress. However, we can all use instruction and reminders about the sometimes overlooked and essential details of instrument flying using today's modern avionics, and Gary presented valuable information with something for everyone. Course subject matter covered everything from the still mandatory recording of VOR checks, seldom accessed knowledge about required aircraft instruments, lighting and inspections to LP+V and LPV minimums, DH vs. MDA, holding, SID's and STAR's, as well as IF vs IAF with a discussion about the requirement to fly (or not to fly) the procedure turn. His material prompted class participation with a spirited conversation about approach procedures and techniques as well as communicating with ATC while defending our position and responsibilities

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as PIC. The refresher course was followed by an evening tour of the OZ Tyler Distillery (Kentucky Bourbon Whiskey) and dinner featuring a live bluegrass band. Ye-ha! Bourbon, barbeque, and banjos – a delicious diversion after the day-long instrument review.

Brace for Impact

The next day kicked off with an in-depth, six-hour review of the Duke POH as well as operational procedures, policies, and techniques. This Duke specific training was followed by Q&A including the sharing of relevant events, accidents, incidents and mistakes in both GA and the Duke fleet. The final evening's formal dinner at the Bluegrass Hall of Fame featured speaker Doreen Welsh who was a flight attendant on US Airways flight 1549 (Miracle on the Hudson). Doreen told the story ("90 Seconds to Impact") from her perspective stationed at the aft jumpseat – the most heavily damaged section of the Airbus. After discovering that they had ditched in the Hudson and not crashed on land, and after making her way to the forward section of the aircraft, she recounts, "Everything was calm up front. The other two flight attendants were dry and perfectly groomed. It was as if there had been two entirely different accidents." Doreen provided lessons in survival and emergency procedures applicable to any audience regardless of occupation or background. Her perspective on the cockpit crew's interaction with the FAs was invaluable to me as an airline captain, and I believe that hearing her lifesaving and life-changing recount of the event should be a mandatory training event for all flight crew members whether Part 91, 135, or 121.

Why a Duke?

Long recognized for exceptional workmanship and solid flying characteristics, Beechcraft built a line of twins employing royal titles: the King Air, Queen Air, Baron, Duchess, and Duke. The development of the Beechcraft 60 Duke began in early 1965 and was designed to fill the gap between the Baron and the Queen Air. On December 29, 1966, the prototype Model 60 made its first flight. Available to the public in 1968, the six-place pressurized, radar-equipped Model 60 Duke was instantly popular as an improvement over the Baron and is widely regarded as one of the most strikingly attractive airplanes ever built. The Beechcraft A60 came onto the market in 1970 with an improved pressurized cabin utilizing advanced bonded honeycomb construction, lighter and more efficient turbochargers, and improved elevators. The last variant, the B60, was introduced in 1974. The interior arrangement was renewed, and the engine efficiency increased with improved turbochargers.

There are those who claim that the Duke was designed to be 30 knots slower than it could have been because otherwise, it would have been faster than the King Air. The Duke's cruise speed is only marginally less than that of a King Air 90 and about the same as a Cessna 421. Beechcraft may not have wanted to take sales away from their highly successful (and profitable) King Air lineups, but I think that the Duke's engine-propeller combination that caused the 30-knot degradation was an unfortunate engineering necessity. Moreover, it's this that relegated the Duke to a small, niche-aircraft in Beechcraft's history and exposed it to issues long ago resolved but still the subject of inaccurate folklore.

Put Up Your Dukes

The Duke - Model 60, A60 and B60 - *Very Shapely*

The Grand Duke - Dukes with VG's, winglets and strakes - *Even More Shapely*

The Royal Turbine Duke - Grand Duke with PT6 turbines - *Shapely and FAST*

According to the FAA's aircraft registration website as of last February, there were 295 Beechcraft model 60 aircraft in the U.S. registry. By model, the count was 39 dash 60's, 52 model A60's, and 205 B60's. A recent Duke Flyers survey indicated that there are about 45 more in the U.S. than the FAA database indicates and also about 60 Dukes that exist outside of the U.S. This means around 400 of the 594 manufactured remain airworthy and productive. Considering that the first Duke was manufactured 48 years ago and the last was 36 years ago, the fleet remains viable and active.

Initially certified up to 30,000 feet, piston Dukes typically operate in the low 20's burning about 45 to 50 gph at 220+ TAS. Some Dukes have converted to turbines with PT6-35's flat rated to 550 SHP. You provide Rocket Engineering of Spokane, Washington, with a B60 piston Duke and a check for about \$900,000, and a few months later (sporting a 4,000 fpm climb, 285 KTAS cruise and 66 gph fuel burn) you have a Royal Turbine Duke that will water the eyes of men, women, children and supermodels. Twenty-one Dukes have been converted so far.

The piston Duke's once troublesome maintenance and operational issues are now relegated to very persistent folklore. Over the years, some early model Dukes have been converted to Lycoming TIO541-E1C4's with alternators and lead-acid batteries. Many have intercoolers, carbide tipped lifters, vortex generators, winglets, and aft body strakes. The entire fleet, save two Dukes, are certified known ice. A thicker engine case, carbide tipped lifters, engine pre-oilers, vortex generators, lightweight starters, alternators and the DFA's brain trust of professional pilots, chemists, metallurgists, engineers, attorneys, doctors, and airline pilots have doggedly smoothed the Dukes rough edges, honing it into a voluptuous machine with razor-sharp value.

For Sale: 2018 Duke, \$2.07 Million

For a two- or three-hour flight in all weather, while hauling four people and luggage at 20,000 feet and 210 kts (65 percent), the Duke is a great value. If you calculate a 4 percent annual price increase (cost of labor, material, and inflation) the 2018 Duke, if it existed, would sell for about \$2.07 million. Something to think about when they currently sell for \$90-400,000. Without reservations or crowds to negotiate, without fellow passengers' knees in our backs or elbows touching ours and without the oversight of TSA, GA is a freedom-enhancing and time-saving privilege that successful entrepreneurs have used for decades. I thoroughly enjoy the privileges provided by my 69' Model 60 Duke. An original print ad from Beechcraft pictured a Duke taxiing behind a follow-me at the FBO. The headline read, "This is the only time your pressurized Duke will play follow-the-leader." I've had approach control direct other twins to make a 360 to make room for a "fast-moving Duke." And every flight I hear, "nice Duke" from someone on the ramp or radio when they see the shapely airplane on the field. The folks at Beech got it right because the Duke gets the job done in all-weather and looks great while doing it – despite folklore to the contrary. Just ask any Duke meister.

Author's Note:

Thank you, Ray, Susan, Bob, Ab, Doreen and the volunteers for an exceptional gathering. For those DFA members not in attendance, please make a spot in your schedule for next year and join us! Prospective members and those looking for more information may visit Dukeflyers.org

Kevin Dingman has been flying for more than 40 years. He's an ATP typed in the B737 and DC9 with 23,000 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 organization 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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Garmin G700 TXi Available for Some Citation Models

Garmin recently announced the availability of the G700 TXi touchscreen flight display for popular Cessna Citation business jet models. The initial Supplemental Type Certificate (STC) for the G700 TXi flight display will be approved for select Cessna Citation II/SII and Citation V aircraft, is available from JETTECH and can be installed across the Garmin dealer network. This is the first validation of the TXi series in this class of aircraft.

The G700 TXi is comprised of a single or dual 10.6-inch flight display that boasts a LCD touchscreen design. Because the G700 TXi is paired with dual GTN 650/750 touchscreen navigators, pilots receive flight management system (FMS)



functionality through an intuitive touchscreen interface. The G700 TXi also integrates seamlessly with these navigators, offering even more operational capability, including fully coupled LPV/WAAS approach guidance, as well as the option to display vertical navigation (VNAV) guidance to fly complex RNAV arrival procedures. **T&T**

Honda Aircraft Announces Performance Package

At NBAA, Honda Aircraft Company announced the addition of a performance package for the HondaJet HA-420. The company's new Advanced Performance Modification Group (APMG) engineered the upgrade, enabling existing HondaJet owners to enhance their current aircraft with several new performance and software features.

The APMG Performance Package offers current HondaJet owners the opportunity to implement Honda Aircraft's latest

performance upgrades on their aircraft including a shorter takeoff field length, an increased maximum takeoff weight, and more mission capabilities. The package also features Garmin G3000 avionics software updates such as advanced integrated Take Off & Landing (TOLD) calculations, increased connectivity with Flight Stream 510 compatibility, and an enhanced electronic checklist. **T&T**

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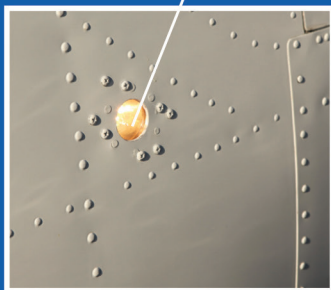
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Business Aviation Stakeholders Key in Shaping Our Industry and Confronting Challenges

by Ed Bolen NBAA President and CEO

As our industry looks towards NBAA's annual Business Aviation Convention & Exhibition (NBAA-BACE) taking place Oct. 16-18 in Orlando, we may also reflect upon a milestone year for business aviation – one that demonstrated the importance of engagement throughout our aviation community on matters affecting us, most notably seen throughout the debate over privatization of ATC services.


Certainly, business aviation operators have reason for optimism. Legislation passed the House earlier this year to reauthorize funding for the FAA, without advancing so-called ATC “privatization”; at this writing, the Senate’s version of the bill is under consideration.

Without question, our industry’s ability to make its collective voice heard on this issue has been key throughout the ATC privatization battle. While NBAA-BACE provides the opportunity for to come together in that shared success, we also know that continued vigilance on this matter is required.

Simply put, ATC privatization is untenable, because it takes aviation system oversight authority

out of the hands of our elected officials – who ensure aviation serves all citizens and communities – and places that oversight in the hands of a small, private group. That group could elect to manage the aviation system not in the public interest, but instead with a focus on business interests – threatening access to airports and airspace for the small and mid-size towns that rely on access to general aviation for everything from civil services, to emergency support, to business access and more.

While this matter has been set aside for the moment, it remains clear we must remain ready to mobilize when necessary. I’m confident we will be able to count on NBAA members, and the rest of the general aviation community, to act once again in shaping our shared destiny as we look ahead to future challenges.

When we gather later this year for NBAA-BACE, we will see on vivid display all the innovation and opportunities provided by business aviation today. We likewise understand that when challenges emerge, our vital and engaged business aviation community is equally prepared to respond. 

NBAA, Industry Examine Fuel Contamination Hazards Following Second DEF Incident

NBAA was concerned over recent news of a second business aviation jet fuel contamination incident in nine months. This event could have led to a serious accident, were it not for the prompt actions of the flight crew.

On Aug. 14, a Dassault Falcon 900EX, operated by Fair Wind Air Charter, was forced to return to Miami-Opa Locka Executive Airport (OPF) after the flight crew received multiple clogged fuel filter warnings on departure, followed by failure of the trijet's number 2 engine. The aircraft returned safely to OPF, but not before a second engine became unresponsive to throttle inputs.

Subsequent testing revealed fuel contamination consistent with the presence of diesel exhaust fluid, or DEF. Federal mandates require the urea-based solution be used to lower noxious emissions from diesel-powered ground vehicles operated on public roads. When mixed with Jet-A, the solution forms non-soluble crystals that can clog aircraft fuel systems.

NBAA President and CEO Ed Bolen noted a similar fuel contamination event occurred last November at Eppler Airfield (OMA) in Nebraska, triggering a special airworthiness information bulletin from the FAA cautioning operators about DEF contamination.

"Despite that advisory, this latest incident demonstrates that while rare, these incidents do occur, and highlights the need to closely examine methods to mitigate and eliminate this potential hazard," Bolen said.

Several aircraft may have received contaminated fuel at OPF before the problem was revealed, according to Fair Wind Chief Operating Officer Alex Beringer. The FBO traced the issue back to a fuel system icing inhibitor additive (FSII, also known as Prist) tank that had been removed from a fuel truck for repair, then accidentally filled with DEF for leak checks prior to reinstallation. The fluids are similar in appearance.


"The FBO had procedures in place to avoid cross-contamination, including the fuel farm



DEF hose being too short to reach the Prist tank," Beringer explained. "However, those procedures were contingent on the tank not leaving the truck." The FBO has since relocated the DEF tank away from the farm, he added.

NBAA Safety Committee Vice-Chairman Tom Huff noted the committee, in collaboration with other NBAA groups and concerned industry stakeholders, will coordinate a thorough hazard assessment of the issue.

"That will include leveraging subject matter experts and industry partners to identify hazard causes and develop targeted mitigations as well as outreach to FBOs and fuel providers to review their fuel and additive handling practices," Huff said.

In an Aug. 27 release, Fair Winds also called upon regulatory officials and industry groups, including NBAA, to take further action on the matter of fuel contamination, including a possible exemption from the DEF mandate for airport ground equipment. "Even the best mitigation strategies are still subject to human error," Beringer added. 

Fitness for Duty About More Than Physical Considerations



Fitness for duty is an important consideration for all individuals serving in a safety-sensitive role in business aviation. This includes ensuring that employees are mentally and emotionally able to perform their roles responsibly, as well as in good physical health.

Stress due to family matters, finances or other factors may significantly affect a person's job performance despite their best efforts to work through those issues, noted NBAA Safety Committee Chair David Ryan.

"It's everyone's responsibility to identify when someone may not be on their game during a particular day," he said. "That's not only because of business or safety concerns, of course – we should also care about the well-being of those we work with."


Maintaining that commitment is especially important for larger operations, he added, where it may be more challenging for managers to regularly interact with individual team members.

"A person owes it to the rest of their team to engage with someone they see who may be having problems and, all else being equal, bring that situation to the attention of their supervisor or operations director," Ryan said. "It might mitigate a potentially dangerous situation."

The NBAA Safety Committee has identified fitness for duty, across all aspects, as one of its Foundations for Safety. The committee also recently developed a Fitness for Duty Policy template for business aviation organizations to adopt as part of their own best practices for operational safety.

"We have committed [our company] to employee fitness for duty, by providing adequate rest opportunities between duty periods, the opportunity for team members to report fitness issues via a positive and confidential process, and encouragement for employees to seek treatment for substance abuse or any physical and mental health issues that they might face," the template states.

Ryan noted that many business aviation organizations have adopted "just culture" models in which managers, supervisors and an individual's coworkers may address such concerns without fear of punitive action being taken against those who find themselves unable to perform their duties.

"We must all be our brothers' or sisters' keeper," he concluded. "We operate in an environment where our mistakes may not happen on the ground at zero airspeed, so it's vital that a business aviation employee feel secure in stating, 'I need to tap out today,' and not fear recrimination for making the responsible decision." 

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Skyward: NBAA's Work to Grow the Business Aviation Workforce



Business aviation is a dynamic, forward-looking industry long characterized by innovation and a pioneering spirit, so it follows that careers in business aviation are very often highly-skilled, high-paying jobs in the fields of the future. That said, like many other industries, business aviation also increasingly faces a significant challenge in ensuring its future workforce demands can be met.

A recent Boeing study highlights the magnitude of this issue, concluding that over the next 20 years there will be a worldwide requirement for close to 100,000 business aviation pilots, with a commensurate number of maintenance technicians, schedulers and dispatchers, and other necessary personnel to support business aviation operations.

Clearly, business aviation faces a daunting task in meeting those numbers, but this is not simply a matter of finding people to fill jobs. The industry needs to attract qualified professionals, and, equally important, to find innovative ways to retain professionals by helping them develop their skills throughout their careers.


NBAA is confronting this challenge through several far-reaching efforts to help attract, retain and grow tomorrow's business aviation workforce, including by hosting student-focused "Careers in Business Aviation" days as part of the association's annual Business Aviation Convention & Exhibition (NBAA-BACE.)

The association also makes available a host of resources to assist companies in developing internship programs, including the *NBAA Internship*

and Career Guide that offers tips to help them start internships, or improve their existing programs. The recently-launched NBAA Mentoring Network helps business aviation professionals grow in their roles within the industry, by fostering a learning dialogue between established industry experts and the next generation of business aviation leaders.

Once a student opts to pursue a career in business aviation, NBAA Charities provides tens of thousands of dollars annually in cash scholarships to help further their aviation education. Significant monetary awards are also available for additional training to advance the careers of those already working in business aviation.

Further initiatives to assist in career advancement include NBAA's Professional Development Program (PDP) that offers an established curriculum to prepare business aviation professionals for management roles within their companies. NBAA's accredited Certified Aviation Manager (CAM) Program represents the pinnacle of achievement for these established industry leaders.

NBAA also strongly supports Congressional legislation aimed at promoting the industry's workforce growth. Examples include those contained in the long-term FAA reauthorization bill recently signed into law: The Securing and Revitalizing Aviation (SARA) Act, providing grants for aviation-workforce education; and H.R. 5701, which supports programs for technical-skills training and apprenticeships. 



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The Very Best of Our Industry Comes to Orlando for NBAA-BACE

This is a very exciting time for business aviation. Deliveries of new aircraft are up, new airframes reshaping the market, and business aviation operations are on the rise in nearly every location across the globe.

All this energy and enthusiasm will be surging throughout NBAA's Business Aviation Convention and Exhibition (NBAA-BACE) taking place Oct. 16-18 in Orlando, FL. NBAA-BACE brings together key aviation contacts from around the world, including current and prospective business aircraft owners, manufacturers and customers to a single meeting place to get critical work accomplished.

Approximately 25,000 attendees from across North America and around the globe will come to Orlando for NBAA-BACE, where they find more than 1,100 exhibits at the Orange County Convention Center (OCCC) showcasing the latest products and services available to help companies of all sizes travel safely, efficiently and securely.


Additionally, more than 100 aircraft of all sizes and for all missions will be featured between the main outdoor static display at Orlando Executive Airport (ORL), the indoor static display in the OCCC and on the show's exhibit floor.

NBAA-BACE also provides a wealth of dynamic speakers and an impressive venue to continue the vital dialogue between regulatory authorities and business leaders about policies affecting the industry. Among the featured speakers this year will be aviation innovator Bertrand Piccard, a pilot of Solar Impulse 2, the first aircraft to fly around the world without using a drop of fuel; FAA Acting Administrator Dan Elwell; and Louisiana Congressman and general aviation advocate Rep. Ralph Abraham (R-5-LA).

This year's event will also host more than 50 education sessions addressing a wide range of topics of interest to *Twin & Turbine* readers, including the debut of NBAA's inaugural Small Operator Symposium. Taking place Monday, Oct. 15, this new symposium will present information on

areas specific to those issues faced by small flight departments, including how to properly address safety issues on a practical basis.

Also taking place Oct. 15 is NBAA's 10th annual Single-Pilot Safety Standdown, featuring interactive learning opportunities, expert speakers and lively peer-to-peer discussions exploring practical tips to enhance operational safety and risk mitigation. On Thursday, Oct. 18, NBAA's fourth annual National Safety Forum will address the basics of maintaining skills and understanding automation in aircraft, including an examination of the physiology and psychology that affects human performance and explore the relationship of leadership and professionalism in aviation safety.

With the international business aviation community growing and changing so rapidly, the only way to stay ahead of the curve is by putting yourself in the middle of it all. NBAA-BACE offers more exhibits, more aircraft on static display and more opportunities for education and networking than any other event dedicated to this vibrant and strong industry. NBAA hopes to see you in Orlando! 



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Scoreboard

What's the most important item in the cockpit? If you said, "the pilot," you are correct. But what about the second most important item? I suggest it's not the autopilot, but instead, the "scoreboard." That tiny, colorful box with all sorts of confusing acronyms situated directly in front of your vision. It's so important because it tells you what the airplane is actually doing if the autopilot is engaged.

And, it is one of the most underused assets in the airplane.

I know from experience (reference "Just a Routine Departure," *T & T* Jan. 2018). And now, from the NTSB's final report on the Cleveland, Ohio Citation CJ4 accident, we know that not using the scoreboard correctly can kill you.

To refresh your memory, the pilot departed Cleveland's Burke Lakefront airport on a dark, snowy December night in 2016, lost control of the airplane shortly after takeoff, and crashed into Lake Erie killing all six on board.

And while I agree there were many other factors in this tragic accident (low time in type, "dark hole" departure effect, etc.), there is one item that might have saved everyone.

Correct use of the "scoreboard."

How many times have you engaged the autopilot in your airplane? Or selected NAV, or PITCH, or FLC? Hundreds? Thousands? And virtually every time, it works like clockwork.



It works so well that we assume it will do so every time. Too often, we don't even look to see if our "selection" has actually occurred. And if we accidentally push the YD button instead of the AP button as I did earlier this year, we can actually "feel" the thump of a servo engaging, even if the wrong one.

All those backlit buttons on the autopilot control panel are merely a "wish list" for what we would like the autopilot or flight director to do. We should view those buttons as meaningless.

Until we verify on the scoreboard what we "want" to happen has actually happened. From the NTSB report:

It is likely that the pilot attempted to engage the autopilot after takeoff as he had been trained. However, based on the flight profile, the autopilot was not engaged. This implied that the pilot failed to confirm autopilot engagement via an indication on the primary flight display (PFD). The PFD annunciation was the only indication of autopilot engagement. Inadequate flight instrument scanning during this time of high workload, resulted in the pilot allowing the airplane to climb through the assigned altitude, to develop an overly steep bank angle, to continue through the assigned heading, and to ultimately enter a rapid descent without effective corrective action. A belief that the autopilot was engaged may have contributed to his lack of attention.

We train in the simulator or the airplane flying 360-degree turns over and over again. Our instructors tell us, "you must not exceed 100 feet or 10 knots, or you fail the exercise." In real life, however, it is unlikely that busting these parameters will get us killed. Not cross-checking your actions on the scoreboard just might.

Fly safe.

With 6,000-plus hours in his logbook, David Miller has been flying for business and pleasure for more than 40 years. Having owned and flown a variety of aircraft types, from turboprops to midsize jets, Patty and David currently own and fly a Citation Mustang. You can contact David at davidmiller1@sbglobal.net.

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