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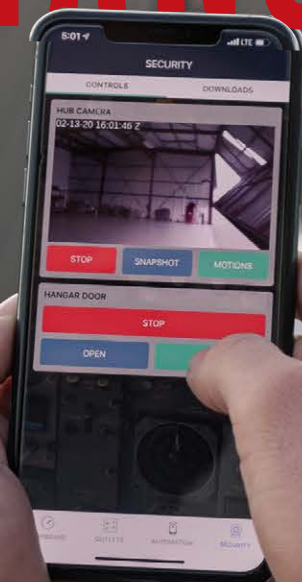
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# Editor's Briefing

by Rebecca Groom Jacobs



## Hangar Community

The word “hangar” can conjure many different meanings to different people – storage, workplace, hangout, shelter, man cave, retreat – or in some cases – home. It’s amazing the multiple titles and sentiments that can be applied to this one simple structure. But, of course, we all know it is what is inside and around the structure that brings the real meaning.

The word that comes to the top of my mind is “community.”

During the summer I learned to fly (2010), I practically lived at Stearman Field in Benton, Kansas (1K1). The residential airpark was hitting a major growth spurt, with a restaurant recently added and the construction of new hangar homes flanking both sides of the runway. Almost every day, I was at the airport either flying, waitressing or spending time with local pilots. While the flying was spectacular (J-3 Cub!), it was my time with the local airport community that ultimately made it one of my favorite summers. We all shared a passion for flight and light-hearted fun – there was something so freeing about my time there.

Down in Vero Beach, Florida (KVRB), my father Randy regularly hosts a Friday afternoon “hangar party” at his T-hangar. It’s become quite the affair, with a dozen or so hangar neighbors and local aero club members attending.

Beer tops are popped, stories are exchanged, and of course at the heart of all conversation – airplanes. Whenever I am able to attend these hangar parties, I am taken back to 2010. There is an obvious comradery among the group that brings me similar comfort. They’ve even recently taken to recounting their stories one by one in a circle – their “funniest” one week, most “humbling” the next. Undoubtedly, you have similar experiences and relationships thanks to your local airport and pilot community.

But that has all been put on hold for now.

I write this briefing during a time when “community” takes on a new meaning. Our country – our planet – was recently turned upside down by the COVID-19 outbreak. To document changes to date here, in a print article, feels pointless as we face a barrage of updates on a daily basis.

It is an eerie and inexplicable feeling knowing the country, along with much of the world, is on pause. But I also find the experience humbling. It is a reminder of our humanity and reliance on each other. And I have no doubt our readers and our industry will be there for each other in community during the difficult months ahead.

In the interim, I encourage you to utilize the tools and resources available to stay connected with your neighbors, friends and owner organizations. This is a time when support and kindness can make all the difference. I find a simple text, email or phone call right now takes on a new meaning than it did a few weeks ago.

You can also take this time to connect with us on Facebook (@twinturbinemag) or email me directly at [rebecca@twinandturbine.com](mailto:rebecca@twinandturbine.com) with feedback or topic ideas for future issues. In this period of uncertainty, one constant remains: T & T is a reflection of the owner-pilot community – in both its ups and downs. I would love to hear from you.

Stay well.

A handwritten signature of Rebecca Groom Jacobs in black ink.



Lloyd Stearman Field Airport (1K1).



# Airmail

## In Response to Kevin Ware's "Turning Professional" (February)

Just a quick thanks for sharing your career path story in the latest T & T. I'm happy for you that you've ended up engaged in a career you enjoy and beyond that share your experiences with us monthly in Twin & Turbine. I've wanted to write before just to say how much I enjoy "Jet Journal" each month. I especially agreed with an article you'd written last year about traveling on commercial airlines. But thought I should wait for another time rather than simply commiserate about all the knuckleheads riding in a jet and pulling down the sunshade appreciating absolutely nothing about either the privilege or physics of flight.

I too am a physician and had to undergo a "top overhaul" a few years ago. While I don't fly professionally, I've made flying a part of my work lifestyle going to locums assignments regularly in my own plane. Committed to flying to assignments has made me approach all my flying with a more professional attitude. In 2018, I was able to fly to every job and did not fly commercial or drive once. Even still, I am always learning and recognizing how I might have performed better. Thanks again.

Myles Tieszen MD FACS

Just read your article in February's *Twin & Turbine* – very inspiring, thank you very much.

It was also nice to see the credit you gave to your wife for her support enabling your success. Congratulations on your awesome achievements!

Sven Frietag

## In a Letter to the Editor



I have been an avid reader for as long as I can remember. I have owned a PA31-310 Panther Navajo for over 20 years. Just as you remembered your family vacations flying in your parents' aircraft, I have had the pleasure of having my now 91-year-old Mom travel with me on a many a fun flight.

Attached is a photo that I wanted to share with you. I always leave my copies of T & T at my Mom's facility. She loves looking at the magazine as it always brings back memories of our adventures. Please keep up your fine work at the magazine.

Clark Tesh

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# Position Report

by Dianne White



## Therapy for Trying Times

As I write this, we are living in unprecedented times. The COVID-19 pandemic has swept through the world and is picking up momentum in the United States. It has not only changed how we travel and fly, but how we live our every day lives.

As the majority of us attempt to isolate ourselves, some with their stockpile of TP and hand sanitizer, there is another form of social distancing that I recently found particularly soothing. I head to the airport. With cross-country travel out of the question, my business travel bird must stay in its nest. However, inside one of our other hangars is our family's jewel, a Cessna 172M that my mother purchased new in 1975. She lost her medical a few years back and my husband and I bought it from her. It is the airplane I attained my pilot's certificate nearly 30 years ago, as well as my daughter, who's now flying for the Navy. With a little over 1,200 total hours on the aircraft, you could say this airplane was mostly driven by a little lady to church and back on Sundays. Treated gently, flown sparingly.



With a bucket, soap, microfiber wand and a hose, I go to work. I'm quickly humbled by how much surface area is on an airplane – even a 172. But, scrubbing the flecks of bug debris from every leading edge is therapeutic. Watching winter's layer of dust trickle off the trailing edge of the wing is cleansing for the soul. After carefully drying and polishing the paint until it sparkles, it's satisfying to stand back and take in the fruits of my labor. She looks stunning, although I'm fairly biased.

Since it's a beautiful spring day with uncharacteristic calm winds, why not fire her up and take her for a flight, I think. My home airport is situated at the southern edge of the Kansas City metro area. Within minutes from takeoff, I'm over farmland and widely scattered homes. Racing (relatively) along at 1,000 feet AGL, I can see the beginnings of new life in the fields and trees. Recent rains have resulted in an explosion of green. The spring time change has stretched our late afternoon daylight and the sun is still far above the horizon.

As I fly along in my little Skyhawk with no particular destination in mind, the lyrics from Rush's "Red Barchetta" pop into my head:

Wind in my hair  
Shifting and drifting  
Mechanical music  
Adrenaline surge  
  
Well-oiled leather  
Hot metal and oil  
The scented country air  
  
Sunlight on chrome  
The blur of the landscape  
Every nerve aware.

I have no illusions that my little 172 is a fair comparison to an antique Ferrari race car, but the feeling of freedom and solitude amidst the beautiful countryside below and blue skies above is much the same. The hum of the O-320 is soothing. *This is flying!*

After a few touch-and-goes at an uncontrolled field 20 miles southwest, I make a circuitous path back toward my



home airport, taking time for a few s-turns. Following the chirp of the main gear on the pavement, I wistfully taxi back to the hangar and pull the mixture. I sit for a while, enjoying the satisfying sound of the little Lycoming as it cools, along with the gyros as they slowly wind down. I reflect that I'm one lucky gal to call this sweet little plane my own.

If there's something good that comes out of our national quarantine, it's allowed me to slow down and enjoy things I normally wouldn't take time to appreciate nearly as much. In our rush-rush, compressed lives, we don't spend enough time pattering around the hangar, staring into the satisfying gleam of clean paint, flying low and slow over the countryside and listening to the metallic popping of a piston engine as it cools. During these trying times, this plane, this time alone, these moments have become my meditation. And my sanity in a world that seems to have gone mad.

From the *Twin & Turbine* family, stay safe and healthy. Hope to see you on the other side, perhaps at AirVenture Oshkosh this summer. **T&T**

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

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# Barely VMC

by Thomas P. Turner

**Q: What's the deadliest category of general aviation accidents?**

A: Attempted visual flight into Instrument Meteorological Conditions (IMC).

According to AOPA's Air Safety Institute, when a "VFR into IMC" crash occurs, it is almost always fatal.

**Q: Who's at risk of a Visual Flight Rules (VFR) flight into IMC?**

A: Experienced, often high-time pilots, in cross-country (not training-type) airplanes are as much at risk as lower-time pilots.

AOPA's Richard McSpadden writes, "a third of these accidents [VFR into IMC] happen to experienced, IFR-rated pilots."

**Q: When are you most likely to inadvertently enter instrument conditions?**

A: When beginning or continuing a flight into marginal weather conditions.

There is no official definition of scud running. Yet a picture likely pops into your mind. You may envision flight low across the terrain, tendrils of rainy cloud reaching from a low overcast to meet the fog below. You may think of a solid yet rainless overcast, a few hundred to a thousand feet or so above the ground, a bright ribbon of light on the horizon promising clear skies ahead. You might picture a sunny summer day, steamy and hot, so bright with haze that you can't see more than a mile ahead. Or you might consider flight on a dark night, the stars and moon hidden by clouds,

<b>VFR</b>	Ceiling great than 3,000 feet and visibility great than five miles
<b>MVFR</b>	Ceiling 3,000 feet or less, but greater than 1,000 feet and/or visibility five miles or less but great than three miles
<b>IFR</b>	Ceiling 1,000 feet or less but greater than 500 feet and/or visibility three miles or less but greater than one mile
<b>LIFR</b>	Ceiling 500 feet or lower and/or visibility one mile or less

the lights below you occasionally flickering and disappearing behind wisps of condensation. Visual-rules flight in any of these conditions is sometimes called "scud-running."

Scud running implies an intentionally hazardous flirtation with visual flight in near (or actual) IMC. Under some conditions, flight under a fairly low cloud deck or at fairly low visibilities can be done safely. In the context of this discussion, I'll refer to managing the risks of legal visual-rules flight in marginal VFR (MVFR) conditions. Few pilots routinely fly VFR in this kind of weather, but sometimes it makes sense for short repositioning flights or other reasons. We need to consider technique and go/no-go decision-making when faced with these conditions.

## When MVFR Turns Worse

For the years 2005 to 2014, AOPA's Air Safety Institute notes 290 NTSB-reported accidents involving attempted or continued visual flight into IMC. That's about one every other week, with 85 percent of these accidents fatal. Almost two-thirds involve high-performance airplanes, flown typically by experienced pilots who are often instrument rated but chose for whatever reason to fly VFR in marginal conditions. VFR into IMC accidents in high-performance airplanes are over 90 percent fatal.

These types of accidents are avoidable with prudent pilot decision-

making. With awareness of the MVFR threat even to experienced pilots, we can derive some recommendations for operation in and around marginal weather conditions and apply knowledge of the conditions that lead to MVFR and IMC to manage the risks and remain in command of your flight.

## Risk Management and Mitigation

In an overwhelming number of these accidents, less-than-VFR conditions were reported well before the crash. We're living in an age where weather data is widely available before and even during flight – all we have to do is look. Check at least once an hour on long trips. Jot down notes to see if the weather trend is improving or deteriorating next time you look, and to verify or refute the accuracy of the

"SVFR [Special VFR] allows for graduated risk in decision making. If CAVU represents the least risk, IFR in VMC is perhaps a little less, IFR in IMC a little more, and SVFR is a little more than that."

– Paul Bertorell



forecasts you heard before takeoff. If you're told St. Louis is expected to be clear all morning, for example, only to find its 2,000 broken when you actually fly over, you know to suspect the forecast of VFR for your destination farther down the road.

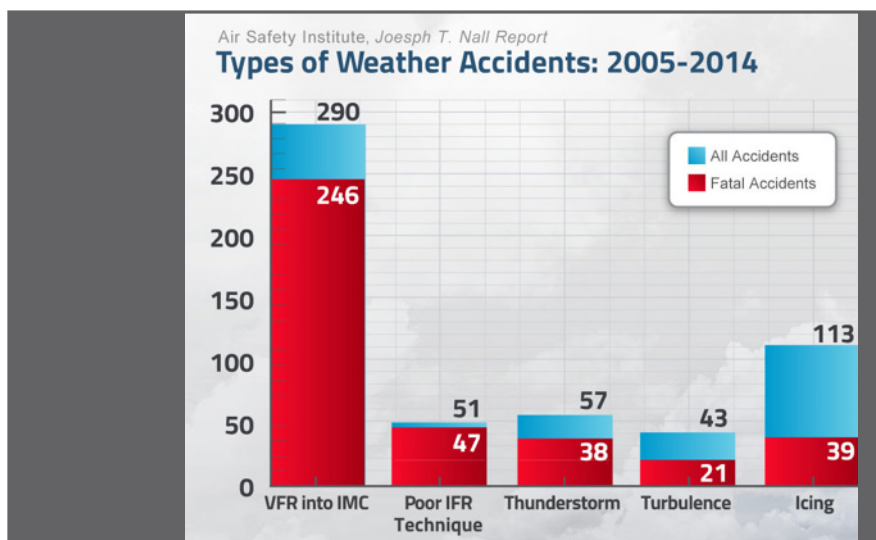
Let's say marginal weather conditions exist for a portion of your flight, your route is entirely away from mountains, and you'll easily complete your trip during daylight hours. How can you minimize risks and avoid becoming a scud-running statistic?

### 1. Know what MVFR looks like.

Most flight instruction takes place in excellent weather. Even instrument training is usually conducted in good Visual Meteorological Conditions (VMC). When weather is marginal, instrument pilot training is usually done on instrument routes and instrument flight plans. That makes sense, given the IFR training mission. No wonder then that the MVFR accident record is abysmal. Almost no one trains for it before actually trying it alone.

The next time the cloud ceiling hovers around 1,500 feet, or the visibility is about five miles (preferably not both the first time), hire an instructor for a short round-robin training flight under Visual Flight Rules (VFR), including landing on at least one airport other than your home base. Your instructor should be extremely familiar with the local area's obstructions and navigation features, as well as your make and model of airplane. He or she will serve as an extra set of hands and eyes in the cockpit should you need any help.

Even your home airport will look different from low altitude or in marginal weather; you'll be amazed at the increase in workload and anxiety brought on by a loss of normal visual cues and gain a healthy respect for the risks of MVFR flight. I bet if you knew ahead of time you were going to fly this exercise that you would spend a lot of time looking at the charts and pinpointing obstacles, finding landmarks you can use along the way, and thinking about how you would find the airport and enter its pattern. This is the way you should always approach



flight at altitudes or in visibility less than normal for you.

### 2. Know where you're going.

Safe flight in marginal conditions demands thorough preflight planning. You need to determine what route you'll use, and where you'll go if your primary route is closed off by weather.

GPS is a wonderful thing. The proliferation of moving map displays and apps greatly increases a pilot's orientation. In the context of low-altitude, low-visibility flight, however, GPS may be more limited than you'd think. Some models have minimum safe altitude or minimum en route altitude information, but they use the standard FAA criteria of 1,000 feet above terrain (2,000 feet in mountainous areas), which may be higher than you're flying in marginal conditions. Unless you keep your GPS database updated, it may not warn of new obstacles along your route. To safely fly MVFR, you need to combine information from GPS and sectional charts (paper or electronic) and plan your route over and around terrain and obstructions. Follow highways and other prominent landmarks to crosscheck the moving map. Keeping to the right of roads, you'll be better able to see your landmark out the left side of the airplane (and you'll avoid the other MVFR pilot coming from the opposite direction). Fly from airport to airport, making a new go/no-go decision each time you pass another runway. Review landmarks near your destination so you can find it in the murk. Even with GPS it may not be as easy to find as you think.

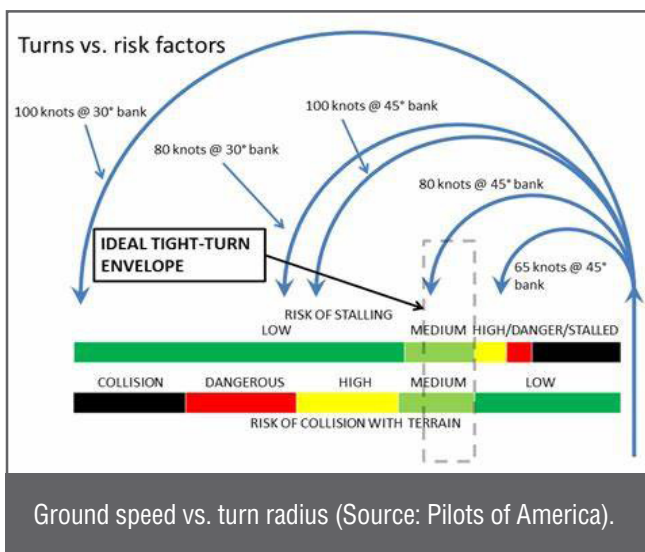
### 3. Define and fly minimum altitudes.

Plot the minimum safe altitude for each segment of your planned flight. At a bare minimum 14 CFR 91.199 (or equivalent in non-U.S. airspace) applies: for fixed-wing aircraft, at least 500 feet above the ground, obstacle or individual at any point except over open water or sparsely populated areas, and at least 1000 feet above the highest obstacle within 2000 feet laterally over congested areas. Helicopters may fly lower, provided the pilot complies with FAA-prescribed routes and altitudes. Crosscheck these altitudes against the VFR visibility and cloud clearance requirements of the airspace in which you'll fly, and you can derive specific minimum (and perhaps maximum) altitudes for each segment of your flight. Chances are you'll have a series of altitudes that changes as you progress toward your planned destination.

### 4. Slow down.

There may be a reason retractable gear and multi-engine airplanes are involved in more scud-running accidents than their proportion in the general aviation fleet. The faster you're flying, the harder it's going to be to avoid obstacles in low-visibility flight.

In his collision-avoidance book, "See and Avoid," Fred Delacerda quantifies the process of detecting and avoiding obstacles: "It takes the average human about 10 seconds to visually acquire a conflict, recognize it as a threat, decide to take evasive action, and make a



control movement to avoid the obstacle. It takes the airplane, on average, one to two more seconds to respond to the pilot's command." In the average 12 seconds it takes, then, to detect and maneuver around an object, an airplane flying at 90 knots ground speed covers 0.3 miles. Cruising at 120 knots, you'll fly 0.4 miles in that time. If you're flying 150 knots across

a stall. Use the configuration you use for downwind in the traffic pattern, maybe even gear down in retractable gear airplanes. The slower you're flying, the better able you'll be to see and avoid a threat.

### 5. Use your autopilot.

I'm in favor of hand-flying the airplane as much as possible, but MVFR flight is a time when a good autopilot is

the ground, you'll cover half a mile. At 180 knots ground speed, you'll fly 0.6 miles in this decision-making time. That doesn't leave a lot of room for error when trying to avoid hard-to-see towers or hills in low visibility.

Slow down! Practice power settings and configurations that allow you to cruise at slower-than-normal speeds while still maintaining a healthy margin above

one of your best tools. Let the machine fly itself, with close monitoring by you. As pilot monitoring the autopilot, you have more bandwidth to address the MVFR functions of navigation and obstacle avoidance.

### 6. Plan your escape.

Like any other go/no-go decision, MVFR flight requires you always leave yourself a way out. Because of the time you've put into planning your MVFR flight, you now have specific criteria to meet at all times: a minimum altitude, perhaps a maximum airspace, and a minimum visibility. If at any time it appears you may soon violate any one of these criteria, execute your escape at once. Do not wait to decide. It will not get better a little further along.

The classic fix for flying into worsening weather is a 180-degree turn back from where you came – a good idea if conditions worsen, or you start to feel uncomfortable with your original plan. Here, too, you'll find a big safety advantage in slowing down and

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using your autopilot if you have one.

In zero wind and at 120 knots ground speed, the diameter of a 180-degree turn (assuming 3 degrees per second, or a standard rate) is about 1.3 miles. One hundred fifty knots yields 1.6 miles off your entry track, and 180 knots puts you nearly two miles off the safe path you used to enter. You may elect to use steeper banks, but they present their own hazards in MVFR. Regardless, in many cases, you won't be able to see obstacles on your escape route until you're well established in your turn.

Another escape path is to go up. If visibility is poor but skies are clear, there's little hazard in climbing. You'll be in a better position to navigate by radio and to call someone for help at a higher altitude. If you're flying under a ceiling, climbing VFR through the clouds is absolutely a last-chance technique. But it's an option if you need it, as long as you've got the training, recent experience and equipment to maintain control by reference to

instruments. From there, it's time to confess your sins to Air Traffic Control and get help to reach the ground. Worry about possible consequences later.

## 7. Know your limitations.

AOPA tells us pilots without instrument training typically lose control of the airplane about 180 seconds after entering IMC. That's three minutes to live. If you wait 30 seconds after entering IMC before beginning an escape, you may lose control less than a minute after rolling out on the reverse course, maybe sooner, if you're a VFR pilot.

If you're a rusty instrument pilot, or you're flying an airplane not equipped the way you usually fly in the clouds (an airline pilot flying a general aviation airplane, for instance), you may have a better chance to maintain control, but you're still not immune. This is definitely not a situation to convince yourself that you're better than you really are, or to put off practice until you're in the game for real. Again, if

you have an autopilot, your escape is the time to use it.

## Making the Decision

It's not the weather itself that causes accidents. It's the way we make decisions about flying in weather. Approach MVFR flight with all the preparation and forethought you'd use on an instrument trip. Do whatever you can to reduce your inflight workload. Fly as slowly as you safely can to have more time to see and avoid obstacles. Know your minimum and maximum altitudes at each point along the way, and the minimum visibility, and use your escape route without hesitation if it appears you may have to violate one or more of those criteria if you continue. **T&T**

**Thomas P. Turner** is an ATP CFII/MEL, 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](http://www.mastery-flight-training.com).



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PHOTO COURTESY OF HANGARBOT.





# HANGAR TECH

Companies connecting owners to their hangars.

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by **Grant Boyd**

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Today, the term “smart home” is not uncommon. More and more, homeowners can simply use mobile apps to control home features such as garage doors, lighting, entertainment systems, doorbells, security cameras, appliances and more. The benefits of such technology include safety, accessibility, energy efficiency, cost-effectiveness and convenience. Maybe you have integrated such smart products throughout your own home. According to an online report, the smart homes market was valued at \$64.60 billion in 2019 and is expected to reach \$246.42 billion by 2025.

So, with the obvious surge expected in smart homes, we wondered is there work toward “smart hangars?” The buildings we house our pricy and precious flying investments? Fortunately, in recent years, several companies have entered the industry with that very mission of integrating technology between pilot-owners and hangars. Below, we explore three of those companies: HangarBot, HangarStack and Hangar Tonight.

## HangarBot

Since launching in 2016, HangarBot has developed multiple new products to automate the everyday pilot's life. It is the company's mission to help bring the aviation industry into a more connected era and has since partnered with well-known brands like Tanis Aircraft preheating systems and Schweiss Doors for automated hangar solutions. The company's first product was the remote door controller.

Pilot and HangarBot founder Morgan Walker (also featured in this

issue's “Five on the Fly”) wanted a simple way to open the hangar door as he taxied in, or even from home. Once he found success in this goal, Walker decided he wanted to take on other problems pilots face during pre-flight and post-flight related to the hangar. Today, the company offers around a dozen product offerings that help aviators take control of their aircraft and its environment, including the HangarBot Hub, Industrial Outlet, Door Sensor, Thermostat and Security Camera.

The HangarBot Hub (4G and Wi-Fi versions) is an internet-connected device embedded with a 24/7 video surveillance camera and motion detection that will send notifications directly to your smartphone. The HangarBot Industrial Smart Outlet allows pilots to preheat their airplane's engine from anywhere, and can also turn on or off lights, fans, batteries, etc. The HangarBot Door Sensor adds a security element by sending notifications to the user when their door is open, closed or left ajar. The HangarBot Thermostat allows for remote monitoring and control of the hangar's central temperature, allowing aviators to crank up the heat while on their way to the airport. And, the soon-to-be-released HangarBot Weatherproof Camera complements the Central Hub camera by allowing for multiple views indoors or out.

“Saving time in pre-flight and giving peace of mind, any aviator can find a use for HangarBot in their hangar,” said Kendra Garrison, the company's marketing coordinator. “This was built as an out-of-the-box solution that just plugs in and works right away. Easy installation does not require permanent changes to the hangar

and most products are mounted with magnets.”

Imagine this scenario: A man walks down the stairs in his home while on his cell phone. With a few clicks, he activates his aircraft's engine preheater through the product's app. The app then alerts him that motion is detected in his hangar, which he confirms is his mechanic after a quick phone call. While on his way to the airport, the hangar fan and coffeepot are turned thanks to geo-fencing technology. This is just one example of how the product can benefit pilots looking to streamline their workloads.

“Our company was built from taking in customer feedback and growing from there,” said Walker. “HangarBot never wants to stop making the pilot's lives easier and safer.”

Available on: iOS

More information:  
[www.hangarbot.com](http://www.hangarbot.com)

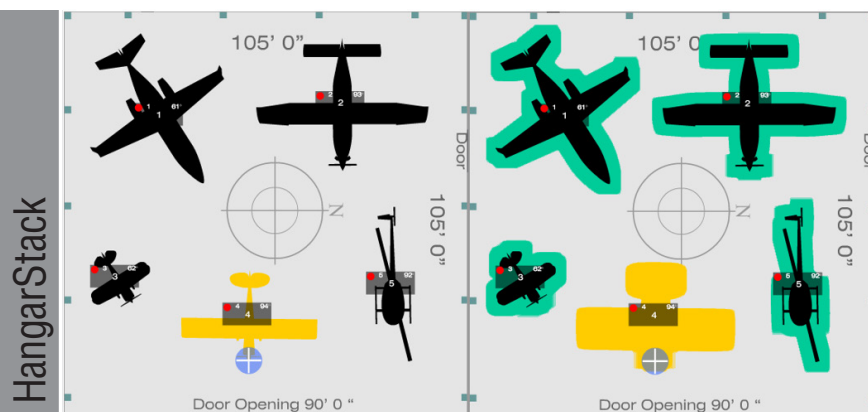
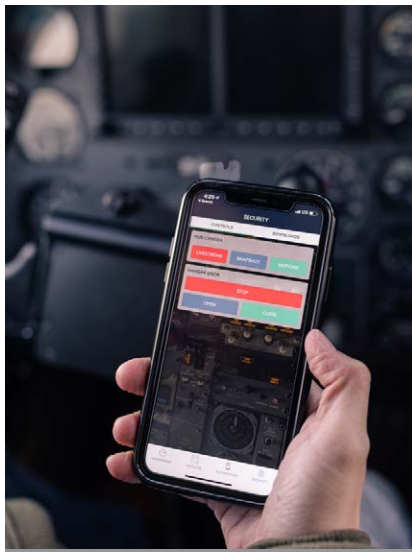
## HangarStack

Created to maximize hangar revenue at FBOs, HangarStack is also a great tool for small aircraft owners looking to best position their airplane(s) and other objects within their hangar.

“Our program allows parties to prevent hangar rash with the capability to pre-plan aircraft movements digitally prior to any aircraft being moved,” said Mike Partin, HangarStack sales manager.

This is accomplished through a scale size, simulated hangar that allows users to “stack” aircraft inside of it. Pricing is dependent upon hangar size and other factors, with a one-time setup fee. For an additional fee, HangarStack users can also add custom-drawn objects to

HangarBot







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their simulated hangar, from tractors to boats. This allows for a more realistic example of their own hangar and the obstacles within.

HangarStack's technology was created a few years ago, with more than 85 software updates occurring within the last year to ensure the product remains a useful tool for FBOs, owners and operators. A demo is available on the website, which allows you to select and test from four hangar layouts (of varying size), one ramp layout and a plethora of planes. While the full product stores more than 450 aircraft in its database (any unavailable ones can quickly be added), the demonstration allows users to select one aircraft per manufacturer.

For my demonstration, "Hangar 3" was selected and random aircraft were chosen to be puzzle-pieced into the 105-foot by 105-foot hangar: a HondaJet, Quest Kodiak, Aviat Husky, Pitts biplane and a Robinson R22 helicopter. Next to the hangar square is another screenshot that demonstrates the product's "spacing" feature. This example shows 3-foot spacing, which is useful to better visualize the amount of clearance between the aircraft and other objects within the hangar, as well as its walls and fixtures. The available spacing ranges from zero to 10 feet.

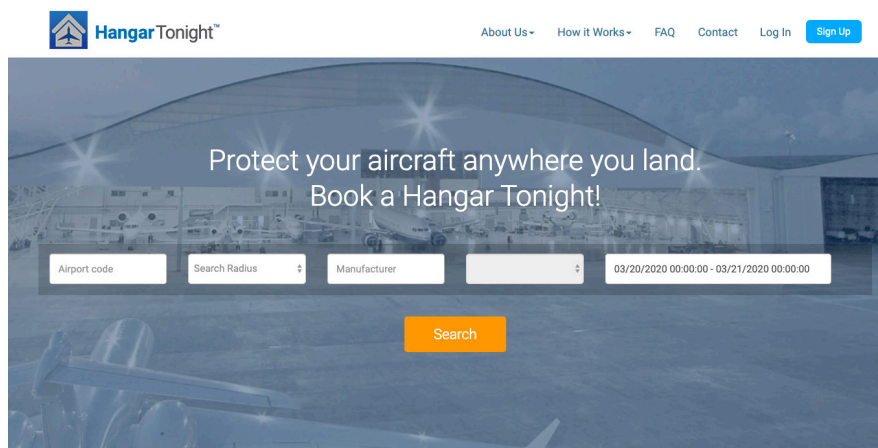
Other useful capabilities in the HangarStack software include assigning a priority level or custom notes to each aircraft, such as "must be ready by 9:15 a.m." or "add 200 gallons of fuel prior to departure." Partin noted that the team is also working toward integrating flight tracking data in order to automatically update the hangar inventory based upon which aircraft are out for flights. For example, if a HondaJet leaves the hangar at noon, the feature would automatically show it re-stacked when it returns. This future addition is just one part of the team's overall plan to help lessen the almost \$1 billion in annual insurance claims attributed to hangar incidents, in addition to making consumers' aircraft movements easier and more efficient.

Available on: Windows, Mac, and iPad

More information:  
[www.hangarstack.com](http://www.hangarstack.com)

## Hangar Tonight

In 2016, Brendan Clarke, former fighter pilot and current commercial real estate professional, witnessed a brief but intense hailstorm at the Colorado Springs Airport. Tennis ball-sized hail caused millions of dollars in damage to aircraft sitting on the ramp. The experience led him to create Hangar Tonight – or "Airbnb" for your airplane. Clarke noted that although there was ample hangar space available at the Colorado Springs Airport that day, there were still several transient aircraft (including a Citation Sovereign and a Gulfstream GV) exposed to the elements that were total write-offs.



Exemplified by this example, pilots flying across the country often need hangars on short-notice to protect their expensive asset from harsh environmental hazards – hailstorms, dust storms, snow, extreme wind, extreme temperature, etc. Hangar Tonight is a site specifically designed to suit those pilots' needs for overnight aircraft storage.

Hangar Tonight allows owners to rent their hangars, or sections of them, and for pilots to arrange short-term (28 days or less) rentals. Currently, there are listings in Colorado, Alaska, Arizona, Florida, Texas and Pennsylvania, with more states coming on soon. Clarke notes that the team is actively working to increase the number of hangars listed and airports that they are available.

Listing your hangar on the website and app is free the first year. The price then becomes \$27 per month for an individual hangar, \$67 per month for an

FBO, or \$197 per month for an airport. Hangar owners simply create a listing by providing the hangar location, dimensions and other details, as well as pictures of the space. Supplying a map of the airfield is also strongly encouraged, as it assists pilots in finding the hangar.

Owners have the discretion to set the listing price, and when a pilot is interested, they can inquire about the listing and "chat" directly with the owner. This upfront coordination prevents scamming, as it ensures that a real pilot (who is given a six-digit alphanumeric code by the company) is making the reservation.

For example, let's say you are an Eclipse 500 owner flying to Colorado Springs. You would be able to log onto the Hangar Tonight platform (there is no fee for pilots to sign up and use the services) and view options of staying at one of the airport's many available private hangars. It is important to note that the software will only list available hangars that fit the particular aircraft inputted. So, T-hangars won't be listed as options for the Eclipse 500 but might be for another aircraft, such as a Piper Malibu or Mooney M20.

After selecting a suitable hangar within the requested date range, you are then able to chat directly with the hangar owner to confirm availability and other details. Once the hangar owner accepts your booking, you will enter your credit card details and a confirmation will be sent to you both upon successful payment. Once payment is confirmed, any additional information



(i.e., door code) will be communicated and sent to you prior to arrival.

Clarke states that they are currently in greater need for hangar owners to sign up than pilots, as they help to grow the platform to more locations.

"For the platform to succeed, the aviation community needs more hangar owners to list their spaces," said Clarke. "You never know when you might be the one who needs hangar protection at an airfield that you fly to."

Available on: iOS, Android, online

More information:  
[www.hangartontight.com](http://www.hangartontight.com)

**Grant Boyd** is a recent MBA graduate of Wichita State University. A private pilot, Boyd is currently working toward his instrument rating, 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](mailto:grantboyd2015@gmail.com)

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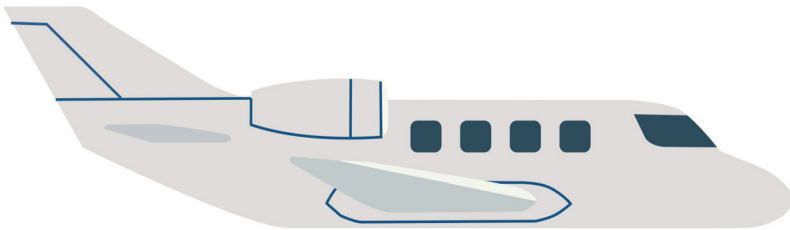


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## owner/operators and chief pilots of these aircraft

100%

TOTAL MARKET COVERAGE

### Jets – 15,414

#### Chief Pilots & Owners

Count	Aircraft
55	AIRBUS ACJ319
26	ASTRA 1125
30	ASTRA 1125SP
49	ASTRA 1125SPX
33	BEECHJET 400
226	BEECHJET 400A
117	BOEING BBJ
371	CHALLENGER 300
53	CHALLENGER 600
31	CHALLENGER 601-1A
108	CHALLENGER 601-3A
49	CHALLENGER 601-3R
286	CHALLENGER 604
9	CHALLENGER 800
163	CITATION 500
279	CITATION 525
261	CITATION BRAVO
150	CITATION CJ1
82	CITATION CJ1+
188	CITATION CJ2
170	CITATION CJ2+
364	CITATION CJ3
123	CITATION CJ3+
273	CITATION CJ4
151	CITATION ENCORE
55	CITATION ENCORE+
305	CITATION EXCEL
18	CITATION I
248	CITATION I/SP
437	CITATION II
57	CITATION II/SP
154	CITATION III
86	CITATION LATITUDE
191	CITATION M2
377	CITATION MUSTANG
123	CITATION S/II
256	CITATION SOVEREIGN
76	CITATION SOVEREIGN+

234	CITATION ULTRA
232	CITATION V
27	CITATION VI
97	CITATION VII
249	CITATION X
29	CITATION X+
208	CITATION XLS
229	CITATION XLS+
1	DIAMOND I
38	DIAMOND IA
5	DORNIER ENVOY 3
227	ECLIPSE EA500
59	EMBRAER LEGACY 500
141	EMBRAER LEGACY 600
67	EMBRAER LEGACY 650
221	EMBRAER PHENOM 100
264	EMBRAER PHENOM 300
73	FALCON 10
20	FALCON 100
19	FALCON 200
196	FALCON 2000
22	FALCON 2000EX
56	FALCON 20C
14	FALCON 20C-5
21	FALCON 20D
2	FALCON 20D-5
31	FALCON 20E
9	FALCON 20E-5
65	FALCON 20F
58	FALCON 20F-5
178	FALCON 50
7	FALCON 50-40
93	FALCON 50EX
152	FALCON 900
24	FALCON 900C
104	FALCON 900EX
176	GLOBAL 5000
128	GLOBAL EXPRESS
19	GULFSTREAM G-100
202	GULFSTREAM G-200
9	GULFSTREAM G-300
22	GULFSTREAM G-400
288	GULFSTREAM G-450

8	GULFSTREAM G-500
500	GULFSTREAM G-550
54	GULFSTREAM G-II
21	GULFSTREAM G-IIB
120	GULFSTREAM G-III
165	GULFSTREAM G-IV
283	GULFSTREAM G-IVSP
170	GULFSTREAM G-V
33	HAWKER 1000A
5	HAWKER 125-1A
6	HAWKER 125-1AS
4	HAWKER 125-3A/RA
11	HAWKER 125-400A
13	HAWKER 125-400AS
12	HAWKER 125-400B
9	HAWKER 125-600A
3	HAWKER 125-600AS
95	HAWKER 125-700A
59	HAWKER 4000
184	HAWKER 400XP
34	HAWKER 750
170	HAWKER 800A
33	HAWKER 800B
336	HAWKER 800XP
39	HAWKER 800XPI
83	HAWKER 850XP
158	HAWKER 900XP
6	JET COMMANDER 1121
3	JET COMMANDER 1121B
8	LEARJET 23
15	LEARJET 24
1	LEARJET 24A
11	LEARJET 24B
28	LEARJET 24D
11	LEARJET 24E
7	LEARJET 24F
10	LEARJET 25
35	LEARJET 25B
8	LEARJET 25C
85	LEARJET 25D
4	LEARJET 28
26	LEARJET 31
161	LEARJET 31A

30	LEARJET 35
350	LEARJET 35A
13	LEARJET 36
32	LEARJET 36A
29	LEARJET 40
186	LEARJET 45
166	LEARJET 45XR
92	LEARJET 55
4	LEARJET 55B
12	LEARJET 55C
253	LEARJET 60
462	PILATUS PC-12/45
108	PREMIER I
6	SABRELINER 40
17	SABRELINER 40A
3	SABRELINER 40EL
1	SABRELINER 40R
21	SABRELINER 60
17	SABRELINER 60ELXM
2	SABRELINER 60EX
58	SABRELINER 65
13	SABRELINER 80
6	SABRELINER 80SC
66	WESTWIND 1
4	WESTWIND 1123
27	WESTWIND 1124
63	WESTWIND 2

### Turboprops – 11,605

#### Chief Pilots & Owners

Count	Aircraft
369	CARAVAN 208
1208	CARAVAN 208B
32	CHEYENNE 400
131	CHEYENNE I
13	CHEYENNE IA
251	CHEYENNE II
56	CHEYENNE III
37	CHEYENNE IIIA
51	CHEYENNE IIXL
23	CHEYENNE IV



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57 JETSTREAM 32  
60 JETSTREAM 41  
25 KING AIR 100  
484 KING AIR 200  
21 KING AIR 200C  
17 KING AIR 200T  
197 KING AIR 250  
173 KING AIR 300  
9 KING AIR 300LW  
554 KING AIR 350  
64 KING AIR 350C  
354 KING AIR 350I  
16 KING AIR 90  
10 KING AIR A/B90  
63 KING AIR A100  
209 KING AIR A200  
48 KING AIR A90  
104 KING AIR A90-1  
93 KING AIR B100  
854 KING AIR B200  
99 KING AIR B200C  
8 KING AIR B200CT  
91 KING AIR B200GT  
4 KING AIR B200SE  
21 KING AIR B200T  
77 KING AIR B90  
329 KING AIR C90  
34 KING AIR C90-1  
191 KING AIR C90A  
351 KING AIR C90B  
80 KING AIR C90GT  
89 KING AIR C90GTI  
150 KING AIR C90GTX  
12 KING AIR C90SE  
242 KING AIR E90

156 KING AIR F90  
25 KING AIR F90-1  
61 MITSUBISHI MARQUIS  
1 MITSUBISHI MU-2D  
22 MITSUBISHI MU-2F  
16 MITSUBISHI MU-2J  
33 MITSUBISHI MU-2K  
10 MITSUBISHI MU-2L  
18 MITSUBISHI MU-2M  
17 MITSUBISHI MU-2N  
24 MITSUBISHI MU-2P  
36 MITSUBISHI SOLITAIRE  
616 PILATUS PC-12 NG  
146 PILATUS PC-12/47  
215 PIPER JETPROP  
68 PIPER M500  
79 PIPER M600  
794 PIPER MERIDIAN  
201 QUEST KODIAK 100  
2 ROCKWELL 680T TURBO  
5 ROCKWELL 680V TURBO II  
5 ROCKWELL 680W TURBO II  
4 ROCKWELL 681 HAWK  
96 SOCATA TBM-700A  
68 SOCATA TBM-700B  
283 SOCATA TBM-850  
100 SOCATA TBM-900  
33 SOCATA TBM910  
111 SOCATA TBM930  
5 STARSHIP 2000A  
68 TURBOCOMMANDER 1000  
30 TURBO COMMANDER 690  
132 TURBOCOMMANDER 690A  
136 TURBOCOMMANDER 690B  
81 TURBO COMMANDER 840  
24 TURBO COMMANDER 900  
52 TURBO COMMANDER 980

## **Twin Piston - 6,320**

### **Owners**

Count	Aircraft
34	BARON 56 TC
1412	BARON 58
2	BARON 58 PA
339	BARON 58P
108	BARON 58TC
3	BARON A56TC
332	BARON G58
186	BEECH DUKE B60
163	CESSNA 340
507	CESSNA 340A
58	CESSNA 402B BUSINESS LINER
130	CESSNA 402C
24	CESSNA 404 TITAN
244	CESSNA 414
352	CESSNA 414A CHANCELLOR
39	CESSNA 421
34	CESSNA 421A
319	CESSNA 421B
596	CESSNA 421C
50	CESSNA T303
110	DIAMOND D42
108	PIPER 601P AEROSTAR
24	PIPER 602P AEROSTAR
515	PIPER CHIEFTAIN
25	PIPER MOJAVE
308	PIPER NAVAJO
208	PIPER SENECA
12	ROCKWELL 520 COMMANDER
4	ROCKWELL 560 COMMANDER
11	ROCKWELL 560A COMMANDER

8 ROCKWELL 560E  
COMMANDER  
7 ROCKWELL 560F  
COMMANDER  
13 ROCKWELL 680 SUPER  
3 ROCKWELL 680E  
15 ROCKWELL 680F  
COMMANDER  
12 ROCKWELL 680FL GRAND  
COMMANDER  
5 ROCKWELL 680FLP  
GRAND LINER

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Count	Aircraft
219	BEECH BONANZA
438	CESSNA 182
56	CESSNA 206
389	CESSNA P210N
21	CESSNA P210R
54	CESSNA T182
818	CIRRUS SR20
2991	CIRRUS SR22
28	MOONEY ACCLAIM ULTRA
10	MOONEY OVATION ULTRA
238	PIPER MALIBU
104	PIPER MATRIX
441	PIPER MIRAGE

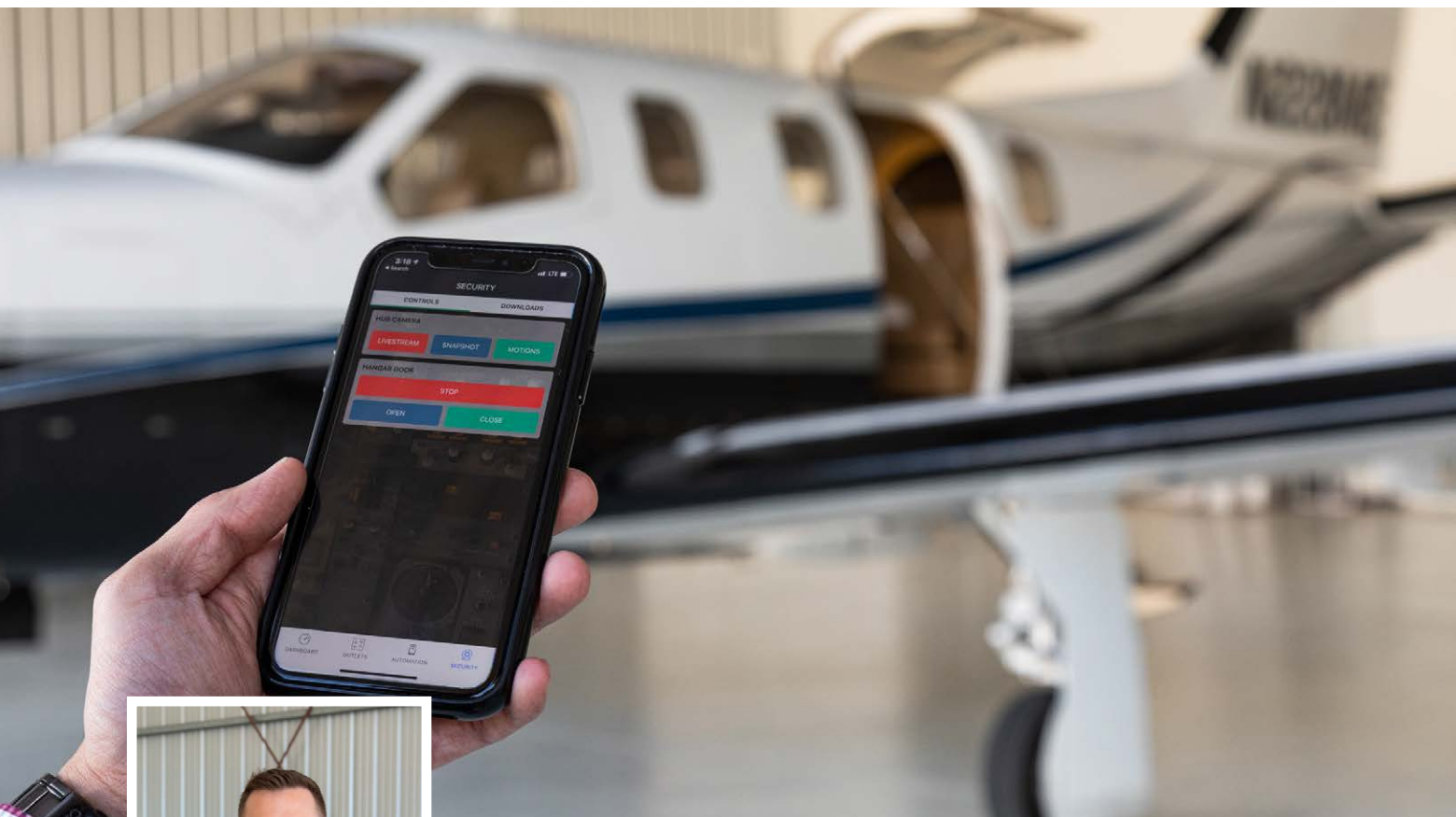
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**TWIN & TURBINE**

# Five on the Fly

by Grant Boyd



**WHO:**

**Morgan Walker**

**COMPANY:**

HangarBot

**POSITION:**

Founder

**HOME BASE:**

Los Angeles

**RATINGS:**

Private Pilot

**HOURS:**

250

## 1) What inspired you to create HangarBot?

HangarBot was created as a solution-based product to automate the needs of general aviators. Our mission is to usher the aviation industry into a more modern, convenient and connected era.

The first product created was the HangarBot Door Controller. A friend and I were looking for an easy remote that would allow him to open his hangar door as he was taxiing in, or even from home for those occasional calls to his mechanic. From there, we wanted to keep building solutions and began polling pilots to see what other tasks they would like to automate during either preflight or post-flight.

## 2) What is your background, both professionally and in aviation?

I have always been interested in technology, specifically mobile tech. Over the years I have worked to deliver mobile app-driven IoT solutions for mid-level manufacturers.

I'm not a professional pilot, but I can stay on the centerline. I see and talk about planes every single day, so while I'm not a professional pilot, I'm in love with aviation. I have been ever since I first touched the controls on my family friend's Cherokee.



### 3) Do you see general aviation as an innovation-friendly industry?

Actually, no. But we are hoping to change that. While the demand from the market is present, aviation technology seems to be trickling down from commercial aviation and the executive jet market.

Very rarely is a new and exciting product available to the general aviation community right off the bat. Our products are reasonably priced and include innovative tech.

### 4) What technological advancements or trends do you forecast for the general aviation industry over the next five to 10 years?

I predict that the connected pilot will become more prevalent. I'm not talking about unmanned navigation, but rather things like aircraft maintenance and airport operations.

Many hangar users today have been unable to experience the benefits of being able to remotely control things like access to the hangar, turning on engine block heaters or managing temperatures. Products like HangarBot will take on all of these challenges and more, to offer a truly innovative and future-forward way of using, building and managing hangars.

### 5) What do you see as the future for hangars themselves?

For the last century, hangars have been simple storage facilities. With the introduction of hangar technology, you can add a connected environment.

We have customers who completely utilize our systems to the fullest capabilities of an IoT device – including customers who streamed the Superbowl from the HangarBot Hub with a projector in their hangar! Our big thing is to “reclaim the hangar” as the hangout spot, as well as automate a pilot's life, making the entire experience and space more accessible and efficient. 



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# The Joy Behind Charitable Flying

As told by volunteer pilots of Angel Flight West.

by Steve Danz and Dr. Stuart Bloom



Dr. Stuart Bloom flies a veteran and his service dog.

Most “heavy metal” owners and pilots who, like us, read *Twin & Turbine* Magazine are well-aware of the business-related benefits and other advantages of general aviation. Tax benefits, flying on our own schedules, the ability to transport colleagues or an entire team, are just some of them. As an attorney with a state-wide employment law practice, I’ve certainly taken advantage of all those items and more. However, until we started flying medical charity missions, my co-author Stuart and I missed what can only be called “satisfying and joyful” flying.

Dr. Stuart Bloom, an anesthesiologist who is also my hangar neighbor at KVNY, and I recently sat down to compare notes on the incredible experiences we’ve both shared with flying patients and family members to and from their vital medical appointments – all arranged through Angel Flight West. Among our most

satisfying missions are transporting kids with special needs such as burns or deafness to and from camp. Camp missions are just perfect for twin and turbine aircraft.

Stuart and his wife, Barbara, are the proud owners of a JetPROP, while my wife Margie and I fly a Cessna 340 (it’s no coincidence that one’s a twin, one’s a turbine, and you are reading this in *Twin & Turbine!*). We’ve found that transporting patients to and from their medical appointments or other specific verified needs, to be extremely gratifying. A typical accolade recently came from grateful passenger Susan K. in Durango, Colorado. She thanked AFW for making it possible to participate in a clinical trial in Denver for Stage III ovarian cancer.

“Your hard work and tireless efforts helped me get treatment in the midst of and throughout my fight to live, which continues to this day! Thank you from a very grateful survivor.”

## Angel Flight Mission

For the patients and their families, utilizing a public benefit flying organization such as Angel Flight West means they don’t have to exhaust their limited resources like energy, time and finances, on commercial air travel or long road trips. Charitable air travel saves that energy for the vital recuperation times needed for many of them. Passengers never experience any costs related to a charitable flight as all the expenses are covered by the volunteer pilot or AFW. Since no money is ever exchanged in return for these flight services, the IRS and FAA consider these operations to be strictly charitable flights under FAR Part 91. Another value-add to pilots who volunteer with is that Angel Flight West provides a pilot safety education program. The organization is also in the process of designing and instituting a safety management system to elevate their operations and volunteer pilots.



to best practices and high standards.

By AFW's calculations, the majority of the planes used in charitable missions are single-engine pistons. So, if the weather is questionable, such as low instrument flight conditions or strong headwinds, there's more worry about cancellation than there might be with an aircraft with greater capability. Twin and turbine pilots with their heftier craft are needed to fill this gap to complete these types of missions. But no matter what type of aircraft is used, AFW Command Pilots always have the right and authority to adjust or cancel a flight – usually due to weather or mechanical issues.

Passengers are also told in advance of a possible cancellation and are required to have an alternative travel plan. This takes the pressure off Command Pilots to fly and complete a mission. No pilot is ever criticized for canceling a mission. Recently, to increase safety and reduce mission completion pressures after a long day, the AFW Board's safety committee disallowed night flights by VFR only

or non-current instrument-rated pilots, recognizing the significant risk increase inherent in these operations.

### The AFW Process

In 2019, Angel Flight West arranged 5,090 missions across 13 western states. That adds up to a total of nearly 10,000 hours and covers an estimated 660,000 miles of fantastic flying opportunities. While this is an impressive number of flights, each one of them is a magical moment in time for the passengers and the pilots, too.

AFW posts each new total mission flight, from home airport to destination airport, on their online mission board as requests come in from social workers, hospital staff, camp directors or directly from passengers. These are vetted for financial and critical need by AFW headquarters located at KSMO (Santa Monica). Angel Flight West always lists each total flight, then breaks up the long segments into separate legs, thus permitting pilots to choose the legs they prefer to fly. This allows



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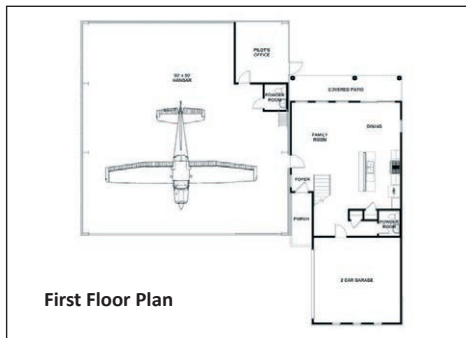
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Right to left: Steve Danz, owner-pilot of a Cessna 340; AFW volunteer with EarthAngel; AFW passengers.

pilots with smaller aircraft or with limited time to accept missions to suit their needs and capabilities. However, for twin and turbine pilots such as Stuart and myself, we will not hesitate to request all or most legs. Our more capable aircraft make it more likely that the charitable mission will be filled and also helps improve the patient flying experience. Time is saved by reducing interim stops to change planes and increases the comfort of our Angel Flight passengers.

### Join Us on a Mission

This morning, our mission will be to fly mom, dad and the patient, a 9-month-old in an appropriate travel seat, from KDVT (Deer Valley, north of Phoenix) to Children's Hospital in Los Angeles. Often, we fly CHLA patients and their families to KBUR, but KSMO and KVMY also work. The office staff at AFW is more than willing to change suggested pick up or drop off airports if you, the pilot, request that change. (For example, flying the passengers to your home base may

make more sense if it's almost as close as the airport listed on the available missions page). Before the flight is ever even scheduled, AFW office staff have pre-qualified the family as in need of a charitable flight through the referring social worker or physician.

On this day, the family is waiting at the designated FBO and is ready to fly when we arrive. Many passengers have flown before and are familiar with the required Waiver of Liability. No mission departs without the passengers and any non-essential crew members signing a waiver. The Volunteer Pilot Protection Act also exists for pilot's protection, but a waiver is an added level of protection for pilots and the organization.

Passenger and baggage weights are confirmed before boarding, the child's booster seat is secured, and you brief mom and dad on your safety procedures. The flight then departs, bound for Santa Monica Airport (KSMO), home of AFW, and where our patients meet Margo (or another Earth Angel volunteer) to drive them to their

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medical treatment or overnight housing. In this case, the family is staying at the Ronald McDonald Children's House, and that will be their first stop today.

The return flight is planned for about three days out, so any Angel Flight West pilot can check their calendar to see if that's a convenient time to fly. A typical page from the AFW website listing available missions will show about 5-10 available flights every Monday through Friday. There are usually weekend flights listed as well, especially for camp flights or for passengers who might need to fly on the weekend. Most other charitable flight organizations around the country have similar web-based portals to find and report trips. On many occasions, a mission assistant will accompany the pilot. This person may be another pilot or a person well known to the Command Pilot. Their role is vital in helping reassure and settle the passengers and relieving the pilot of additional distractions. Stuart and the JetPROP usually complete their

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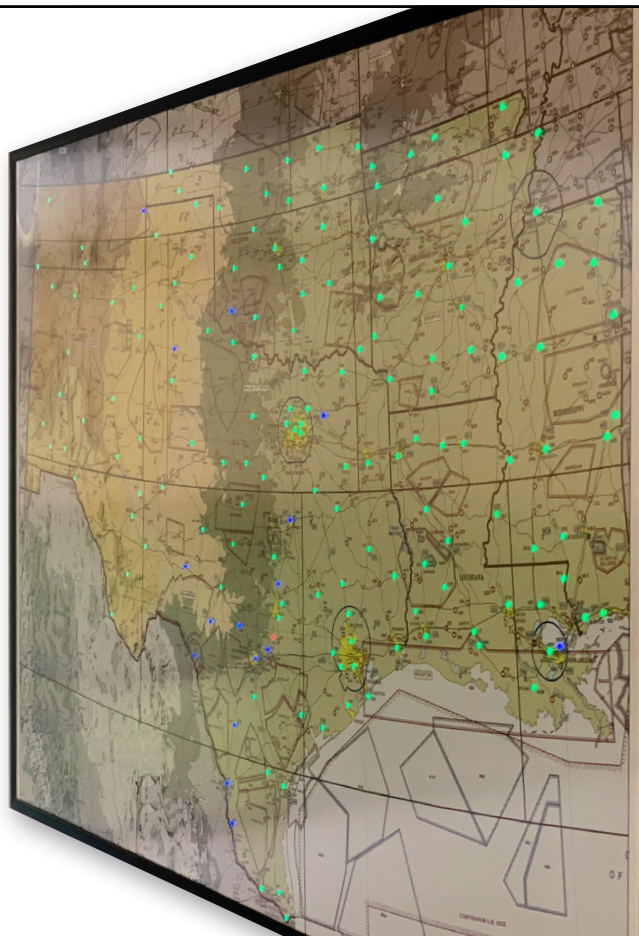
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missions faster than our 340, but we can handle a larger load, such as a few additional passengers or more baggage.

Once all are safely back home, the Command Pilot then files a simple mission report online. The report allows pilots to address any passenger challenges for coordination staff to address or safety concerns noted on the trip. The latter are then forwarded to and reviewed by the AFW Safety Committee to help determine ways to mitigate these problems in the future. The Command Pilots may also make note of the destination airport FBO's special features such as reduced fuel prices or waived fees for AFW flights for future AFW pilot awareness. The mission completion report serves as a perfect year-end charitable donation record. (Tax savings are beyond the scope of this article, check with your tax advisor).

While we are filing the online mission report, we can check to see other new missions posted that are convenient to our personal schedules.

Angel Flight West also provides air transportation to wounded veterans in need and their families, blood transport, patients for hospice care, and relocation for victims of domestic violence. Referrals are made through the main office where staff screen and confirm need.

### Do Some Joyful Flying

Definitely, flying charitable missions is a win-win for the public and the pilots. So, we encourage you to get out there and do some joyful flying!

There are literally dozens of public benefit flying organizations around the country and you're probably already familiar with some, such as Pilots N Paws, Wounded Warrior Project, Make-A-Wish Foundation, and Veterans Airlift Command. While Angel Flight West covers the 13 western states, including Hawaii and Alaska, other Angel Flight organizations provide arranged flights for the remainder of the United States. Check them out and find the one that works best for your geography and aircraft.

Angel Flight West is a 501(c)(3) charitable organization with a 4 Star Charity Navigator rating. Find them online at [www.AngelflightWest.org](http://www.AngelflightWest.org) or call (310) 390-2958. For those of you seeking further information on public benefit flying organizations right for you, check out online resources such as [www.angelflight.com/locator](http://www.angelflight.com/locator); [www.aircarealliance.org/volunteer-opportunities](http://www.aircarealliance.org/volunteer-opportunities); [www.volunteerpilots.net](http://www.volunteerpilots.net).

**Author's note:** *Stu and I would like to thank our wives, Barbara and Margie, for their help preparing this article and for their never-ending, enthusiastic support for our missions. We are so lucky to have them join us when their time and available space onboard makes that possible. Additional thanks to Josh Olsen, AFW's Executive Director, and his staff of 10, who recognize and help each command pilot. Having this incredible staff has made mission selection and coordination with patients, relay leg pilots, earth angels, like being part of a private concierge flying service.* **T&T**



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## Increase Your Plane's Value in Today's Marketplace

A few thousand dollars spent now can be the difference between the right price and no sale at all.

by David Lee



PHOTOS COURTESY OF SOLJETS

It's no surprise that the aircraft sales industry is a highly dynamic and cyclical marketplace. At any given point, one model market can be "on fire" at the same time another market is completely dead. This said, the pre-owned jet marketplace in 2019 softened compared to the previous few years where inventory levels had stayed at healthier numbers. Given the current market conditions, it is critical to present an aircraft in its best possible condition when first introduced to the market. As the adage goes, you only get one chance to make a first impression.

When a premium aircraft comes to market at a good price, it is much more likely to receive multiple buyer

inquiries. And if it's represented well, it is even more likely that the inquiries will lead to serious interest. Granted, high-pedigree/premium aircraft are the fastest to sell in any market conditions, but especially now, taking the right steps to present an aircraft in its best possible condition can add tremendous realized value for potential buyers. As we at SOLJETS like to tell our clients selling aircraft: investing \$5,000 now can add \$50,000 or more to the purchase price when it sells. How often do you see a return on investment like that?

The following tips are meant to assist an aircraft owner when he or she is ready to put their plane on the market for sale. Whether or not you use professional representation (dealer/

broker), it's best to remove or at least minimize any possible objections buyers may have to purchasing your plane. Ever heard the phrase, "a no-excuses plane"? Well, that's the goal: eliminate any excuses you may have to offer when advertising your plane. An excuse later down the road in the sale process can be meaningful, costing you much more than it would simply handling pre-sale.

### **Tip #1: Make Your Plane Look Good.**

This may seem like a simple one, and it is, so there's really no reason not to make your plane look good. Yes, this can be costly, but it also has the greatest effect on the saleability of your plane.



“Investing \$5,000 now can add \$50,000 or more to the purchase price when it sells.”

Before listing your airplane, you should give it a thorough visual inspection, inside and out. Better yet, ask a friend or trusted advisor to do a visual inspection with you. We can be "nose blind" to our 14-year-old dog, and similarly, we tend to overlook the imperfections that others see easily. Don't be defensive when your advisor points out defects. Listen and take good notes. How does the paint look? If at all possible, have any cracks, chips or blemishes professionally treated

and repaired. How does the interior look? Unless you expect, without a doubt, that a new owner is going to replace the interior, take the right steps to clean up the cabin and cockpit. Fix any tears in the leather; re-dye faded leather; replace cockpit seat sheepskin covers if old and matted; remove stains from carpet, sidewall, or headliner; ensure all seat features like headrests, armrests, and recline are functional; and have any broken or chipped cabinetry repaired if at all possible.

Before showing the plane to a buyer, remember the small details count. Have the plane fully detailed and polished, including any brightwork (like heated leading edges), pneumatic boots and tires. Pay extra attention to entryways and baggage areas. A nicely kept, clean baggage area shows that you take pride in the entire aircraft, not just the cabin. Making it shine will ensure a smile on everyone's face. Inside the cabin AND cockpit, try to organize any materials laying out. Put checklists away; hide the lavatory toilet paper and clean up any snacks, drinks or magazines sitting out. Finally, vacuum the cabin and cockpit. Even consider getting a dusting tool to remove dust and small debris from cabin surfaces and small areas like FMS keypads. Do you have any screens in the cabin or cockpit? Clean those as well with a microfiber cleaning cloth. Those stuffed animals you like to keep on the seats might enthrall the kids, but be sure to remove extra clutter, decorative items and excess supplies. Think

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"clean and light" as opposed to busy and decorated.

## Tip #2: Have Your Records in Order and Organized.

Now that your buyer has seen your beautiful plane and agrees you've taken wonderful care of it, surely he or she is ready to look through the records and see how meticulously you've kept those as well. You do have that all organized, right? At SOLJETS, this is one of the first topics we cover with clients when listing their aircraft as we always strive to have a complete and accurate story of the planes we sell. You can do this all on your own, too.

First off, do you know the complete ownership history of your plane? Think about important details: types of operations in which it's been involved (private or commercial); locations hangared (or not hangared); registration history (the various countries in which it's been registered/owned); how long and during what periods did what entities own the plane? Here in the United States and many other countries, you can contact the local registry and request ownership and airworthiness records history. This is time and a small fee well spent so you can accurately represent your plane to a buyer. The key is being knowledgeable about your plane's life.

Secondly, where and how are your plane's records stored and organized? The condition and organization of your records is a direct reflection on both the overall maintenance of your plane and you as a seller/owner. Even if you are missing logbooks, you should ensure clean, organized logs and paperwork before any showing of your plane. Separate log entries from service tags, and keep those separate from invoices, and keep those separate from user manuals. Put everything in three-ring binders and place in chronological order. Use plastic bins as needed if you have an older or high-time plane with tons of material.

## Tip #3: Accomplish All Overdue and Consider Coming-Due Maintenance.

This tip comes in as common knowledge for many owners, but it's still

worth noting as it goes beyond just making sure your plane is current. An unairworthy plane does not look good to anyone, so yes, you should ensure all maintenance is current, but just as important, what does the future maintenance outlook look like?

In many cases, if your airplane has any major inspections coming due in the next 12 months, a buyer may attempt to use that as a negotiating tactic against you. This does not mean you need to pre-emptively complete future inspections, but it would be wise to be educated on what inspections are coming due and what the cost will be. At SOLJETS, we like to have on hand a 12-month/150-hour forward-looking maintenance report for all the planes we sell. If your plane is enrolled in electronic maintenance tracking like CAMP, FlightDocs or Traxxall, running one of these reports is as easy as a few mouse clicks on your computer.

A final topic to consider along with maintenance: does the equipment on-board your plane operate in accordance with the manufacturer's specifications, i.e., does everything work? If you've deferred maintenance on non-airworthy equipment, like a coffee maker or in-flight entertainment, it would be wise to have those items fixed before you show your plane to a buyer. Remember, the goal is "no excuses!"

## Summary

The process of buying a plane can be a daunting one, and as a seller, you can help make that process just a bit more pleasant by following the tips above. The time and money invested now are all but guaranteed to return to you in some sort of multiple when a buyer recognizes your airplane as a high-pedigree, must-buy-now option. **T&T**

**David Lee** is a partner and co-founder at SOLJETS, with more than 15 years of aviation industry experience. Holding a degree in International Relations from the University of Vermont, David is fluent in Spanish and specializes in the import/export of aircraft from Europe. He holds type ratings in the Citation Mustang and Embraer Phenom 100. You can contact David at [david@soljets.com](mailto:david@soljets.com) or 847-920-7000.



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# From the Flight Deck

by Kevin R. Dingman



## Don't Quote Me Pilots and ballplayers: If you say it, they will listen.

Baseball is 90% mental; the other half is physical.

– Yogi Berra

Flying may often require a modicum of depth perception and occasional Jedi-like reflexes and hand-eye coordination, but usually it's 90 percent mental; the other half is physical. Some mountain-moving strength might be needed in getting the airplane out of the hangar and into starting position, but once in flight, there would have to be ugly turbulence or a brisk crosswind during takeoff or landing for us to get physical. Unless that is, our copilot has frozen up, and we have multiple system failures. Normally, however, on any given flight, we have lots of time to meditate.

The gull sees farthest  
who flies highest.

–Richard Bach

Typically, pilots anticipate and alleviate, plan and plot, estimate and guesstimate, check and crosscheck, brief and debrief. But once at cruise, we often contemplate. Sometimes our minds theorize, hypothesize and philosophize. And it's during these existential moments that the philosophies of pilots, ballplayers, even (gasp) politicians, can be virtuous words to live by (even if their fuzzy math doesn't permit the percentages to populate

properly). So, what do these 20th and 21st-century prophets have to say about the true meaning of flight?

You can observe a lot  
by watching.

– Yogi Berra

I had to explain to my editor that this article would arrive late. Because, like ancient relics or modern-day petroglyphs chiseled onto the media of our times, these virtuous words to live by took hours, days, even months, to delicately and selectively excavate from the modern-day archeological library: the internet. Such disciplined research certainly shouldn't be held to a deadline. But now, and finally, thanks to the painstaking and tireless research of this Indiana Jones-like T&T writer, we can pursue enlightenment vicariously through their pearls of wisdom. Let's begin with the overriding philosophy of our job as PIC. The one that has been pounded into all of our pilot-y brains since the beginning. Taildragger pilots emphasize it by saying, "Fly it until it's tied down." It's the adage in which we are reminded to aviate, navigate and then communicate – fly the airplane first and to keep flying it until it stops moving.

You do what you can for as long as you can, and when you finally can't, you do the next best thing. You back up but you don't give up.

–Chuck Yeager

If you're faced with a forced landing, fly the thing as far into the crash as possible.

– Bob Hoover

It ain't over till it's over.

– Yogi Berra

Of course, what would our philosophical discussion be without acknowledging the monetary component of our passion.

When asked how much money flying takes: Why, all of it!

–Gordon Baxter

A nickel ain't worth a dime anymore.

– Yogi Berra

In previous columns we've talked about our pleasure, passion and even love of flying. These next quotes remind us that not all of us had a straight or smooth path into aviation. Some had to transition from another endeavor and struggle or make significant sacrifices in order to pursue the dream of flight. And oftentimes, difficult choices had to be made because in aviation, like life, seldom does a right or a left turn put you in the same place – unless you live on a large cul-de-sac style road as Yogi did.



When you come to a fork in the road, take it.

– Yogi Berra

All our dreams can come true – if we have the courage to pursue them.

– Walt Disney

Never interrupt someone doing what you said couldn't be done.

– Amelia Earhart

It's all a gift.

– Dick Karl

(oncology surgeon and writer turned jet captain)

The focus and the concentration and the attention to detail that flying takes is a kind of meditation. I find it restful and engaging, and other things slip away.

– Harrison Ford

While passionate about flying and our airplanes, we all know (often through harrowing experiences) that piloting isn't all bubblegum, unicorns and sunshine-lollipops – as demonstrated by the vast proliferation of famous quotes emphasizing these axioms of aviation.

The Cub is the safest airplane in the world; it can just barely kill you.

– Max Stanley

Airplanes are near perfect; all they lack is the ability to forgive.

– Richard Collins

In theory, there's no difference between theory and practice.

In practice, there is.

– Yogi Berra

Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect.

– Captain A. G. Lamplugh

Instrument flying is an unnatural act, probably punishable by God.

– Gordon Baxter

An airplane might disappoint any pilot, but it'll never surprise a good one.

– Len Morgan

Rule books are paper – they will not cushion a sudden meeting of stone and metal.

– Ernest K. Gann

We made too many wrong mistakes.

– Yogi Berra

He who demands everything that his aircraft can give him is a pilot; he that demands one iota more is a fool.

– Len Morgan

There are two kinds of airplanes – those you fly, and those that fly you.

– Ernest K. Gann

If you could kick the person in the pants responsible for most of your trouble, you wouldn't sit for a month.

– Theodore Roosevelt

There is no such thing as a natural-born pilot.

– Chuck Yeager

Nowadays, many think, "the future isn't what it used to be," which is certainly true (see "Participation Trophy," September 2019, T & T). But "if the world were perfect, it wouldn't be." Most of the stories in this column

end on a humorous, lesson-learned, educational or emotional note, and this one is no different. So, for many, this ending will seem like, "It's like déjà vu all over again" (those were three more of Yogi's). These next two express this author's position quite well.

Harmony of muscle, mind and mechanism. Flight seems an extension of one's own body.

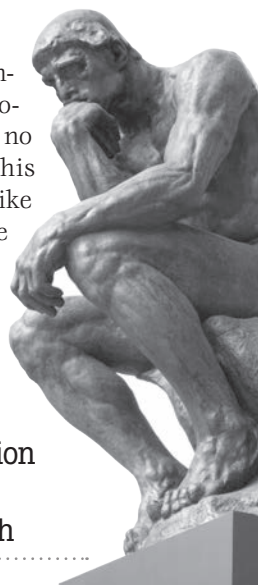
– Charles A Lindbergh

I am a creature of the sky and that drives both my flying and writing.

– Richard Bach

I wish that we could print the quotable things I've heard in the cockpit at work. Heck, I wish I could remember half of them. Suffice it to say that before the days of political correctness, when pilots were more likely to release the eloquent philosopher from within, many pearls of wisdom were born during red-eyes, trans-cons and at hotel bars. Which we all know are the true birthplaces of not only existential moments but answers to the world's problems, political epiphanies and to most child rearing and marital discord issues. Many of the long-flight and bar-born axioms of aviation seem fuzzily to me and not very remember-y. Perhaps this explains why the "90 percent mental; the other half is physical" math is off a bit as well. Apparently, our Jedi-like intuition and mindpowers can be diminished under certain conditions. But don't quote me on that. **T&T**

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



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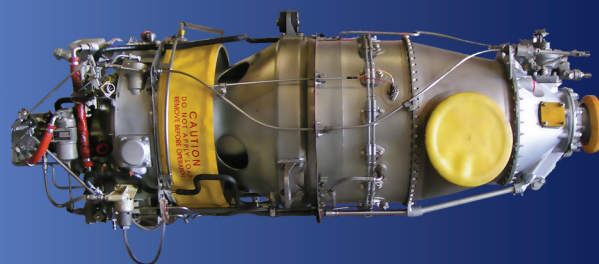
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# UNLEASH THE POWER OF YOUR PC-12



Hello. I'm Tim Gump and I was the test pilot for the Speed Cowl project. Since the introduction of Speed Cowl in August 2019, I have answered hundreds of questions from PC-12 owners and operators. The main question is "What are the benefits of Speed Cowl?" There are several—let me touch on a few.

## COWL INTAKE DESIGN

The stock Pilatus cowl is referred to as a chin cowl. In general, chin cowls are not efficient due to the turbulent air they develop which reduces the airflow (ram air recovery) to the engine. The design of Speed Cowl is referred to as a pitot cowl. Like a pitot tube, the inlet is positioned lower and forward to capture uninterrupted airflow. Speed Cowl provides increased ram air recovery to the engine which equates to better engine performance. Examples of efficient pitot cowls include the King Air B200/300's, the new TBM 900 series and the upcoming Cessna Denali.



## HEATED INLET LIP DESIGN

Take a look at the left side of the stainless steel inlet lip on your PC-12. You will undoubtedly see discoloration on the lip due to excessive heat. There is roughly +800° F exhaust entering the lip at that point. The heated air moves to the right side of the lip where it exits at about 350° F. Over time the carbon fiber and paint start to deteriorate, especially on the left side of the lip. As all PC-12s age, heat damage to the carbon fiber and paint is inevitable. Speed Cowl's patent-pending heated stainless steel inlet lip features internal baffling reducing the temperature of the exhaust entering the lip and maintains a more even temperature of the heated air as it moves through the lip. This design will reduce the possibility of heat damage to the carbon fiber and paint over time.

Keep a look out for more Speed Cowl benefits. In the meantime, if you have any questions email [tim@edmo.com](mailto:tim@edmo.com).





# Jet or Turboprop: Which is Easier to Fly?



It sounds like a pretty easy question, right? Maybe not. The answer depends on when your airplane was designed. The newer the certification, the more integrated the airplane. The Citation Mustang, a 2006 design, has about 50 switches, levers and toggles to manipulate. The King Air C90 has more than 90. The latest single-engine turbine models like the TBM 940, Piper M600/SLS and Pilatus PC12-NG are chockfull of workload-reducing features like a single-power lever and even autothrottle.

Now that I am flying a 1990s C90A King Air, I thought you might like some data points from older airplanes. The venerable King Air was designed in the 1960s and most of its systems harken to another era – a time when cell phones were just an idea. My recent jet experience, the Mustang, CJ1+ and M2, feature varying degrees of avionics integration. Especially on the Garmin airplanes. So much so that in the G3000-equipped M2, there are almost no pressurization controls at all. Simply input the airport identifier in your flight plan and the field elevation is automatically loaded into the pressurization system. No climb/descent rate controls either. Everything is automatic.

Not so for the C90A. Everything is manual. Setting the field altitude, cruising altitude, and rate of climb or descent are all done by hand – more added workload. In the Mustang, the windshield is heated with the flip of a switch, and likewise in the older King Air. But in the CJ1+ and M2, both designs from the early 2000s, there are five or so switches and noisy valves that must be set to distribute hot air to deice the windscreen. More workload for those jets.

For power management, the jets win hands down over the King Air. All three have FADEC-controlled engines. Simply push the throttles to takeoff, climb or cruise detents, and you are essentially done. In the King Air, the pilot

is the FADEC computer. Engine over temperature, over torque, and effects of altitude and temperature, all are in the hands of the PIC. Substantially more workload there.

The fuel systems can be vastly different. The later model jets have mostly simple on or off controls and cross feed options. The King Air's fuel controls consist of a panel with seven switches and toggles. More workload.

Avionics is another can of worms. The newer, the better.

Because I am somewhat of an avionics nerd, I bought a C90A with Garmin G1000. Many older King Airs have been upgraded from their original “steam gauges” to Garmin G600 or TXi displays that do a great job but are often not fully integrated with non-Garmin autopilots. Take altitude pre-select, for example. It is necessary in some models to set altitude twice, once on the existing preselect and then again on the PFD. Confusing.

The solution to many avionics challenges in a C90 is a Garmin autopilot for non-G1000 airplanes, which is close to certification. The G1000 system, with its integrated GFC700 autopilot, is awesome, and the NXi option is even better.

Whether a jet or turboprop, newer models will have easier to manage systems and more integration into the airplane.

Have fun shopping.

Fly safe. **T&T**

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





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