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JUNE 2020 \$3.95 US

VOLUME 24 NUMBER 6

GREG MINK
PREMIER 1A

PilotTube

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VIEWERS INTO THE COCKPIT

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Malibu vs. Mirage

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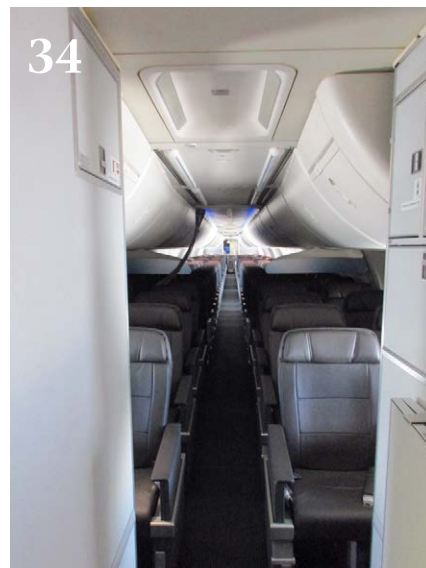
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for free www.twinandturbine.com

Editor's Briefing

by Rebecca Groom Jacobs



View from Upside Down

This summer marks 10 years since I learned to fly.

In those 10 years, I have been fortunate to experience a host of unique airplanes and flying, but one of the most fun (and eye-opening) experiences occurred just earlier this year when my husband Jared and I visited Patty Wagstaff Aviation Safety in St. Augustine, Florida.

Jared, a professional pilot, was attending the school's Owner-Pilot Confidence and Airmanship Training course for a refresher in upset training and aerobatics (you can find a detailed recount of his experience in the article "Retrain Your Brain" found in this issue). While Jared was away on his second training flight, instructor Allan Moore offered to take me up for a quick spin in their Super Decathlon. An unexpected but readily accepted offer!

We briefed on the ground, strapped on my parachute (somewhat disconcerting) and loaded into the airplane.

In the air, Allan walked me through a "preview" of the type of maneuvers covered in a beginner upset prevention and recovery training (UPRT) course. Though this was not my first aerobatic experience, it was my first with a training focus. I concentrated intently on what was happening with the airplane and around me – the direction of the nose, the wing's position on the horizon, my body senses, etc. We performed aileron rolls, loops, inverted flight and, an especially rare one, flat spins.

I shadowed the controls as Allan explained each step and recovery process along the way. But I can tell you firsthand, I was completely disoriented. Unusual attitudes are, well, unusual. The brain cannot easily process what you are seeing and feeling to provide a safe, instinctive reaction unless it is trained otherwise.

As Jared points out in his article, "Once the abnormal feels normal, we give our brain the chance it needs to provide the appropriate inputs to correct the scenario." And the best way to get there is experience and practice – especially in a real airplane, if possible.

My brief exposure to this training was all the proof I needed to realize the benefit of training such maneuvers in the chance you find yourself in a loss-of-control occurrence. Not to mention, a whole heck of a lot of fun.

Maybe you have also attended an eye-opening UPRT course of some kind. They are popping up with increasing regularity over the last few years as the FAA, owner-pilot groups and general aviation organizations turn a collective focus toward minimizing incidents related to loss of control inflight. If so, I would enjoy hearing about your training experience. UPRT safety efforts is an area I see us continuing to highlight in future issues.

Rebecca Jacobs



Airmail

In Response to Dianne White's "Therapy for Trying Times" (April)

I always go straight to your article when Twin & Turbine arrives. Your writing style reminds me of my late Mom who wrote about her worldly travels for decades for a large newspaper in PA. (She flew as a commercial passenger). However, it's the content and not the style that attracts me to your page. This time the 172. I own an SR22 and love it, but I often do miss the slower, unhurried joy of a 172 – the latter of which brought me my private license well after the time required for most. Your article brought me back to chair fly with you. Thanks!

As a p.s., I took my plane out last week from my home airport, KHEF, and completed much the same as you wrote of. Was just good to be up in the air and loving freedom.

Henry

Dr. Henry Koch, Ph.D.

Henry, thank you for your note. I would have loved to meet your Mom. She sounds like a lady who definitely loved adventure.

So glad I could inspire some chair flying and some real flying as well. The news gives us much to be anxious about, but I've found flying has a neutralizing effect. It forces you to focus on the task at hand and live in the moment. That's what I really love about this kind of flying. Here's to America to getting back in the air soon.

Dianne

In Response to David Miller's "Jet or Turboprop" (April)

I'd like to mention the Eclipse Jet. It is so simple and intuitive to operate compared to anything I've ever flown, including piston, turboprop and jet. He mentioned all the circuit breakers and switches – the Eclipse has just 10 mechanical CB's, four in each armrest, and just two on the instrument panel. All the rest are on a "synoptic" page on the MFD being electronic CB's and easy to deal with.

Fuel/balancing is totally automatic. It is full FADEC, push all in for takeoff, pull back to MCT (max continuous thrust), and never touch the power again – unless you want to slow down. Go continuous to 41,000 ft. The affectionate "Barking Betty" talks to you – at 140 kts, she says, "landing gear." Easy to turn her off, but at 120 kts, you can't. Automatically switches to standard baro when passing 18,000 ft., enter landing altitude once for pressurization, etc. Such a great single-pilot plane. Far easier to fly than my former Meridian, Turbo Commander and even the Lancair IV-P!

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Piston Power Series

Piper Malibu vs. Piper Mirage

by Joe Casey



PHOTOS COURTESY OF CLINT GOFF

Editor's note: *Though neither are twin or turbine, these two make an exception to be included in this piston series.*

I think the piston versions of the PA46 are some of the sweetest airplanes on the planet. They fit a nice niche between the unpressurized semi-cross country piston airplanes and the pressurized “big airplanes” that are sometimes multi-engine and often turbines – but that always come with a hefty operating price tag. Said another way, the piston PA46 performs as a “big airplane” on a budget, and this has made it a sweet spot in the market.

Created by a brilliant design team led by Jim Griswold and included present PA46 instructor and aerodynamicist John Mariani, this team dreamt big, producing a clean-sheet

airplane that continues to stand the test of time. Simply put, there are other single-engine pressurized piston airplanes, but none that have the excellent pressurization, greater than 1,000 nm range capability, FIKI operations, cabin-class passenger comfort and flight control harmony that makes the piston PA46 a solid IFR platform. The PA46 is in a niche by itself, and this has placed Piper in the envious spot of having no true competitors. Yes, there is the Cirrus SR22 series and the Beechcraft Bonanza (both unpressurized), and the Cessna P210 (less-than-desirable pressurization), but there is no competitor that offers as complete a package as the PA46.

Piper Malibu

The Piper Malibu was first available for purchase in 1984, and initial sales were strong as compared to other aircraft manufacturers. Because of liability laws that saddled manufacturers with horrific legal expenses, the mid-1980s was a time that saw most aircraft manufacturers slow production. Many simply closed their doors. But, the Malibu literally saved Piper. The Malibu was a fabulous design well received by the market.

The original engine selection for the Malibu was the 310-horsepower Continental 520. This is one of my favorite engines because it can be flown lean of peak, which allows for super efficient operations. A Malibu at FL250 will cruise at 210 KTAS and sip 15.5 gph. That's stunning performance – literally the best efficiency of any airplane I've flown. And those numbers are not inflated. I regularly see that kind of performance on every Malibu I fly. But, the Malibu is not going to be flown at FL250 very often as it takes a long time for the Malibu to climb to FL250. And the engine (especially the turbochargers) are working hard five miles up in the sky. The sweet spot for a Malibu is the upper teens to lower 20s. You'll fly in the sweet spot regularly and still see cruise speeds of 195 to 200 KTAS with the fuel burn being 15.5 gph at all cruise altitudes with "normal cruise" power selected.

With 120 gallons of fuel available, the Malibu can stay aloft longer than any bladder reading this article. Even at normal cruise power, the Malibu can fly for over seven hours (1,400-plus nm), but if you pull the power back to economy cruise, you can fly for nearly nine hours and go over 1,500 nm. I don't know of any piston airplane that even comes close to that range capability. If your airplane has the optional STC to add 20 additional gallons of fuel, you can go even further and give your posterior chain a real test. The range is never an issue with the Malibu, so you'll rarely tell the line guy to top it off as you do with most other airplanes.

Takeoff performance in a Malibu is certainly not brisk, but you'll get off the ground in less than 1,500 feet and climb out initially at 700 to 1,000 fpm depending upon weight and density altitude. I normally fly a "cruise climb" of about 140 KIAS all the way up to the cruising altitude.

As time progressed, Piper wanted to make the Malibu better and some upgrades came along. In 1986, a new hydraulic system was installed. And in the same year Piper went to electric flaps. But, the real change happened in 1989.

From Malibu to Mirage

Purportedly, Continental had some quality control issues in the late 1980s with the manufacturing of its engines. This gave Piper the push to consider another engine manufacturer, and Lycoming was ready and willing to offer up their TSIO 540 for the newly styled Malibu Mirage. Lycoming also offered its engine in a 350 horsepower version, which made the PA46 look even better on paper.

So, in 1989 the Malibu Mirage entered the marketplace with the Lycoming 350 HP engine, a newly styled interior, a heated windshield (as opposed to the hot plate found on the Malibu), and a lot of hope that sales would increase. Sales did increase, but not all was well.



The Malibu Mirage first entered the marketplace in 1989 with the Lycoming 350 HP engine, newly styled interior and a heated windshield – with Garmin avionics later integrated.

The increase of 40 HP with the Lycoming engine did not translate into increased performance. The suggested setting for Turbine Inlet Temperature (TIT) in the Pilot Operating Handbook (POH) is to "lean to peak," which produces a fuel flow of about 19 gph. But, this creates a TIT that is far too high to ensure engine longevity. Early Mirages experienced cylinder failures related to the excess heat, and the owner population had to adapt. The only way to decrease the excess TIT is to lower the power (at the sacrifice of speed) or enrichen the mixture and cruise (at normal cruise power setting) with a fuel flow of 21 to 22 gph.

So, despite the increase in 40 HP, the Mirage is no faster than the Malibu and climbs no better than a Malibu – it only burns more fuel. The performance of the bigger 350 HP engine was also offset by the addition of about 200 pounds of nicer interior. If the performance issues were not enough, the Lycoming engine presented an internal problem for Piper.

The Mirage engine had huge crankshaft troubles in the early 1990s. Literally every Lycoming engine had to receive a new crankshaft, and there were some high visibility accidents associated with the crankshaft issues. To compound the problems, there were some fatal accidents in the early 1990s that caught the attention of both the public at large and the FAA. An airworthiness directive (AD) was issued by the FAA that seriously restricted the PA46 from flying its intended mission, effectively grounding the fleet.

The result was the airframe going through an analysis by the FAA that was akin to another entire re-certification. It was a scary time for Piper (which was also going through



The Mirage has changed over the years in terms of styling, avionics and interior – but it still has the same proven airframe as back in 1989.

bankruptcy) and all of the Piper owners who had airplanes that could be orphaned. Fortunately, the investigation results declared the PA46 innocent. The FAA heralded the PA46 as a great airplane, worthy of certification, lifted the onerous AD, and declared that lack of proper training was the real culprit in the rash of accidents that plagued the fleet. Piper emerged out of bankruptcy and production continued.

As with most dark clouds, there's typically is a silver lining. That silver lining was the formation of the Malibu/Mirage Owners and Pilots Association (MMOPA). The owners of the Malibu and Mirage aircraft banded together to save the PA46, and in doing so created an organization that has become the flagship of OPAs (Owners and Pilots Associations). Just about every type of airplane has an OPA, but MMOPA is one of the best in the industry, even today.

Piper Mirage Today

The Mirage has changed over the years in terms of styling, installed avionics packages and interior appointments, but it still has the same airframe and engine as back in 1989. Sales returned as prospective owners realized the black mark on the fleet was not because of a bad airplane. Today, with the addition of the Garmin G1000 NXi avionics, Piper renamed the Mirage the "M350," and it is a fabulous airplane.

The M350 that rolls off the assembly line in Vero Beach today is the best version in a long line of incremental changes in the PA46, and it is exquisite. The Lycoming engine is a reliable and smooth performer, the newest interior is stunning, and the G1000 NXi avionics package is industry-leading. It is a mature product that performs extremely well.

The Decision

So, which PA46 should you consider buying/operating? Those who migrate to the Malibu are driven by efficiency. It is hard to beat the efficiency of the Continental 520, and there's an STC available for the Malibu to upgrade to the Continental 550. Both are smooth running, powerful and incredibly efficient engines. All of the quality control issues of the 1980s are gone in today's Continental engines. If you like incredible range, cheap operation and low acquisition costs, look no further than the Malibu.

But you might have to look for a long time. They are getting older and some airframes lacked proper maintenance over the years. A Malibu that has received good care and feeding is hard to find – and typical owners tend to keep the airplane forever and won't sell. A nice Malibu with all of the upgrades will fetch well over \$400,000, and there'll be a long line of buyers ready to gobble it up. Plus, Piper didn't make many Malibus (relatively speaking). You might find a beat-up version with no upgrades, or one in desperate need of maintenance, but you really don't want to be the owner who has to bring that airplane back to a high standard. It'll cost you a gob.

I think one of the best deals on the market is a 1990-era Mirage. There are usually plenty of them available in the marketplace. They have the nice interior appointments, and the Lycoming engine enjoys solid support. It is going to require more fuel to keep it aloft than a Malibu, but fuel is the cheap part of owning any airplane. As you move to a more recent year model, the Mirage price will go up but the airframe time will usually go down.

The neat part of owning a PA46 is the airframe is "mature," meaning that all of the bugs have been worked out of the airplane and excellent support exists. Piper's mentality toward owner support has changed over the years, and it is far better today than ever before. With piston versions continuing to roll off the assembly line, parts availability and support are good. Also, there are plenty of maintenance facilities (both Piper service centers and standalone maintenance providers) that are dedicated to the PA46 fleet. With well over 2,000 airframes on the market since 1984, the PA46 fleet enjoys robust consideration from STC-developing entrepreneurs. The avionics manufacturers all have the PA46 lineup in their sights as they develop new products.

My point in all of this discussion? The piston PA46, whether Malibu or Mirage, is an excellent airplane for the owner that wants long-range, all-weather, IFR capability. If you are willing to own an older airframe, the Malibu is more efficient. If you want newer, the Mirage/M350 is incredible and owes a lot to the Malibu lineage. Both are fabulous airplanes that flat-out perform. **T&T**

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



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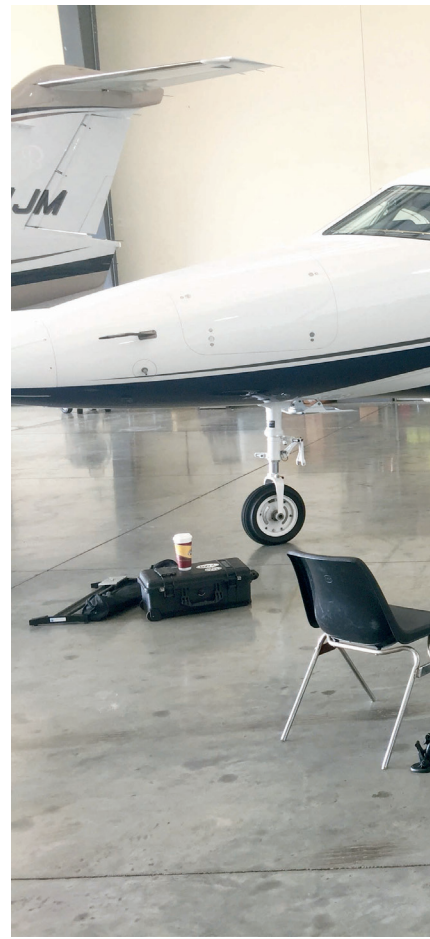
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Owner-pilots invite viewers into the cockpit.

by **Dale Smith**



**Premier 1 Driver:
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What do you get when you combine an experienced F-16 pilot, a Beechcraft Premier 1A jet, and a cockpit full of cameras with some creative videography and YouTube? You get Premier 1 Driver and the chance to fly “right seat” as Greg Mink travels to exciting locations throughout the United States, Canada and the Caribbean.

Mink's Background

Like most American families, when Greg Mink was growing up in Indiana, dinner time was "family time." And, like most of us, evening conversations started with, "What's new?" or, "What did you do today?" Usually, those questions were answered by "Not much" or, "Nothing very interesting." But Mink vividly remembers one dinner time conversation in 1982 when his dad had a new and, what turned out to be, life-altering answer.



Top: The Cessna 172 purchased by Greg's father for their flight training. Right: Greg served 10 years in the Air National Guard.

"When I was young, my dad and I raced motocross together. I had gotten injured in a race, so my parents (especially my mother) were looking for a safer activity for me to pursue," Mink said. "So, one night at dinner, my dad casually mentions that he bought a Cessna 172 that afternoon. He had always been interested in flying. So, we hired a flight instructor and started our flight training together when I was 15. He got his license in about a year. I had to wait until my 17th birthday to take my check ride."

In short order, the younger Mink went on to add his instrument and multi-engine ratings. And while his ratings advanced, so did the family's need for a faster form of aviation transportation.

"After doing all of our training and early flying in the 172, we move up to

a Piper Seneca II, which we used for a couple of years until I went off to college," Mink said. "I think along the way I watched 'Top Gun' a few too many times. I was bound and determined I was going to fly fighters."

"I looked into the Navy, but a neighbor suggested the Air National Guard, which is part of the Air Force," he said. "The ANG had a unit right in Fort Wayne, so I started the interview process while I was at Indiana University. I earned my

Fighter Squadron, *Black Snakes*. He flew F-16's out of that base for 10 years.

"At the end of my ANG career, I had accumulated over 1,000 hours in the F-16. It was a thrilling ride, but I was getting too old for this young man's game," he said. "So, when my time was up, I left the Guard and went back into the family business. Today, I am COO of Modular Devices."

Small Airplanes Power Big Growth

Modular Devices, Inc., specializes in providing temporary, mobile medical suites to hospitals and facilities to use during times of renovation or expansion. The units allow hospitals to provide uninterrupted patient care to the communities they serve.

"Most of our customers are hospitals in smaller communities," Mink said. "We take pride in personal service, and that requires site visits. Living in Indianapolis, that can make direct air travel to our customers difficult. It's hard to get anywhere without at least having one connection or a long drive."

As the company's dependence on private aircraft grew, so did the size and performance of their aircraft.



management degree, then went to work for my father's company, Modular Devices, Inc."

Mink said that about a year after graduation, he got accepted into the Air National Guard's fighter pilot program. After moving up through the training ranks, he was stationed in Fort Wayne, where he joined the 163rd

After its start with the venerable 172 and Seneca II, Modular Device's fleet expanded quickly up through a pressurized Piper Navajo, Cessna P-210 and a Cessna 414 in 2003.

"I really enjoyed flying that 414 and put quite a few hours on it in a short time," Mink said. "Around 2005, we bought a long-body Mitsubishi MU-2

Marquis, and a year or so later, we added a K-model MU-2 with Dash-10 engines. We had those through 2013, but to meet our expanding mission requirements, we needed even more speed, range and the ability to get up over the weather."

"We were coming up from the Marquis, which has a pretty big cabin. Most of the light jets were just too small inside," he said. "The Premier 1A offers a good size cabin for a relatively small airplane and the composite structure is very quiet."

Mink said that he also wanted a fully-integrated avionics suite. "I'm the veteran of my share of avionics upgrade projects and the whole process has just worn me out," he said. "I wanted a package that was integrated from the factory without the added downtime, cost or hassles. The Premier 1A has the Rockwell Collins Pro Line package, and it's been great."

"From the integrated avionics to the cabin comfort, to the outstanding performance and operating costs, the Premier was, and continues to be, the ideal solution for us," Mink said. "Today, I call it our 'magic carpet.' The Premier has opened up all kinds of new opportunities for us."

Premiering Across Europe

After looking at Premier 1A's all over the U.S., Mink said that they actually found their ideal airplane where you'd least expect to find it: England.

"The owner had passed away and it was in the family's estate. They just wanted to see it gone," he said. "It was very well maintained and in excellent condition with 1,400 hours, which is relatively low time for a jet."

"While the airplane was the best available for us, the opportunity to take my dad to Europe to pick up our first jet was too good to be true," Mink said. "We hired the family's pilot to accompany my dad and me as we flew the Premier around Europe for a few weeks before crossing the Atlantic back home."

"Because my dad and I started flying together, to be able to share a trip like this with him was truly a once-in-our-lifetime experience," he said. "On the way back across the

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The honey bee decal on the engine nacelle serves as a humorous nod to unwelcome (and expensive) guests following a trip to Texas.

Atlantic, we stopped in Iceland, and at Narsarsuaq Airport in Greenland. To be there in front of that famous control tower with my dad was the culmination of a truly wonderful time for me."

The Right Premier Becomes the Best Premier

Since bringing the Premier IA home in 2013, Mink, as the company pilot, has put over 1,200 hours on the airplane. And, as you'd expect, it's had a few upgrades. To meet the FAA's ADS-B mandate, the Premier's avionics were updated with the Collins Airspace

Modernization Package, which also included the addition of synthetic vision, LPV approach capabilities and Flight Path Vector displays.

They've also had the exterior paint and interior redone to "Gulfstream" standards by SureFlight Aircraft Completions. Upon close inspection of the new paint you'll see the caricature of a honey bee on the left engine nacelle just ahead of the U.S. registration, N390GM.

As Mink shared the story in one of his videos, the cartoon bee's

significance is both sad and humorous. To make a long story short, on one of his two-day trips to Texas, a swarm of honey bees and their queen took up residence in the Premier's left engine. The removal of the uninvited hive required the complete overhaul of the Williams engine at the cost of six weeks of downtime and more than \$440,000.

"When they painted the airplane, the guys at SureFlight put the bee cartoon on the engine as a joke," Mink said. "They were going to take it off. But when I saw it, I laughed so hard it just had to stay on the airplane. It helps keep things in perspective."

Even with the encounter with the eusocial flying insects, Mink and his father are even happier with the Premier IA today than they were when they picked it up.



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"The Premier's a bit of a dichotomy; it's a big airplane for its size, and yet it's very fast and fuel-efficient. You'd think you wouldn't get all those things together, but it's proven to be all that and more," he said. "It does everything very well, but one of its strong suits is it climbs fast. On a standard day at gross weight, it's around 21 minutes to 41,000 feet. And once you get there, you're cruising at .76 mach."

"It's a little heavy in the roll axis, which is fine with me. Basically, wherever you point the nose, that's where it's going to go," Mink said. "And, it rides well through turbulence. My wife (aka, Premier 1 Rider) doesn't like turbulence at all. Of all the airplanes we've had, this is by far her favorite."

Mink said the Premier 1A meets their exact mission requirements on 90 percent of their flights, which is a lot better than most owners can say about their airplanes.

"The Premier can take us nonstop from Indianapolis to anywhere on the east coast, no problem," he said. "When

we fly to the west coast – something we could not efficiently do with any of our other airplanes – it's one stop in Denver or Cheyenne."

"The single-pilot aspect of the Premier 1A is another great advantage to me because it gives me great flexibility to quickly plan and execute a trip. That's a great benefit in business," Mink said. "This airplane has

“ If I can encourage other pilots to accept the challenge of making their next flight better and safer than the last one, then I'm doing my job with my YouTube videos.”

really enabled our business to grow. We can go places and do things faster and easier than we ever could before. It's expanded the reach of our business more than I had ever imagined."



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He also said that on some business trips, he does take along a qualified co-pilot. While he's quite comfortable flying single-pilot, the demands of being both a businessman and a professional pilot can be a bit overwhelming.

"Single pilot jet operations can get busy, really fast. Having the second pilot just takes some of the pressure off of me, even if it's just for flight planning and ground handling," he said. "But, as we get busier, the thought of having a crewed aircraft is an idea that's becoming more interesting to me. Safety is paramount to everything we do."

Premiering on YouTube

Mink said his YouTube channel, Premier 1 Driver, evolved from him just wanting to share videos of approaches and landings at interesting airports with his dad.

"The first one I posted was landing at Telluride, Colorado, in our 414. I had one camera hanging off the co-pilot's sun visor," he said. "I was surprised by

the number of views and comments it got. It's just grown from there."

"Today, I enjoy the process of creating the videos, especially the photography part," Mink said. "It gives me a chance to step back and really enjoy some of the amazing scenery and views that we pilots get to experience, but are often too busy flying the airplane to enjoy. The landscapes, the clouds, the water – there's beauty all around us on every flight."

Mink said that thanks to the countless comments he's received, he's evolved his videos to try to give viewers an actual "right seat" experience. That means he's going to give you the "good, bad, and ugly" of these flights.

"There's a human side to flying an airplane. I make mistakes. We all make mistakes. From a sloppy read-back to a less than perfect landing, I'll point that out in the video," he said. "It would be easy to edit those mistakes out. But, just like the guy who's trying to figure out how to land a 172 in a

crosswind, we can all learn something on every flight."

"I've been flying for 30-plus years and have over 6,000 hours in all these cool airplanes, and I still have something to learn," Mink said. "If I can encourage other pilots to accept the challenge of making their next flight better and safer than the last one, then I'm doing my job with my YouTube videos."

Stay tuned for the next PilotTube feature in the July issue. **T&T**

Dale Smith has been a commercial, private and business aviation marketing and media communications specialist for nearly 40 years. He is an award-winning aviation journalist and aviation artist. Dale has been a licensed pilot since 1974 and has flown more than 40 different types of aircraft. Contact Dale at dalesmith206@comcast.net.



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Five on the Fly

by Rebecca Groom Jacobs



WHO:
Glenn Watson

COMPANY:
Mach Point One
Aviation Photography

POSITION:
Owner/Photographer

HOME BASE:
GTU

RATINGS:
ATP MEL, COM SEL

HOURS:
2,500

1. Can you summarize your aviation/piloting background?

I was born into a general aviation family with my dad teaching high school aviation courses and flight instructing. But due to life, finances and a family move when I was 8, I took a 20-year hiatus from flying. Once I had a decent job in my late 20s, I picked up flying again and knocked out my private in a rental Cessna. Soon after, I bought a Skyhawk (172M) with a few friends and began the “airplane owner” phase of life, which basically meant selling everything I have to get an airplane. It was a great plane – flew it from Texas to Oshkosh and everywhere in between for years.

Like everybody, you always want more, and after having three daughters, the Skyhawk was a little tight. It wasn't long before I was daydreaming about a six-place. During this same time period, I got very interested in air to air photography. Enter the A36 Bonanza – sexy, fast, six seats and certified for flight with the doors removed. The photo biz brought so many airshow and aerobatic airplanes and friends into my life that I also naturally got interested in the upside-down flying. A great friend loaned me her Super Decathlon to try my hand in Sportsman aerobatic contest flying. I was hooked, eventually buying a Christen Eagle, which we still have and enjoy.

2. *When (and why) did you first enter the air-to-air photography scene? How has the industry changed up to today?*

I've never been satisfied being "okay" at anything. And a motorcycle adventure up the California coast in 2009 found me detouring to Reno to take photos of the airplanes at the Reno air races. The photos were garbage and this was all I needed to challenge myself to get better. Air-to-air photography seemed to be that "golden ring" everybody reached for, so in 2010 I found an opportunity to go up on my first air-to-air (a2a) photoshoot – flying on a B-25 Mitchell Bomber photographing two awesome military jets from the open tail. It was the most amazing experience, and it was that moment I decided I wanted to be the best a2a photographer in the world.

I'd say the biggest changes in my limited time in the industry are the challenges brought about by the quality of iPhone cameras and the sheer number of people who want to do it. I'd love to think I had something to do with inspiring other photographers to think bigger and aim higher after seeing what I was able to accomplish in the industry. But I'll let you in on a little secret – the actual photo-taking is the easy part. The planning, formation flying and photo aircraft equipment are the hard parts. Once that's in place, I just go after the most dynamic, unusual and exciting photos I can dream up – and hopefully, it continues to stand alone often enough to keep paying for my airplanes.

3. *Can you walk us through your creative/planning process that occurs each photoshoot?*

My goal for each shoot is to try and get a unique aircraft angle or formation of multiple aircraft that has never been captured before. It helps me push the limit by constantly competing with myself. Also, I have my own team of formation pilots that are the real secret to the photos – without their time and skills, none of this would be possible.

Going into a shoot, we typically have an idea of 75 percent of the obligatory shot list. The remaining (my favorite) happens dynamically as we fly and observe the light and backdrops changing, and as the form pilots get more comfortable with the particular aircraft. Every shoot is different whether it's a mid-afternoon 60-second airshow grab behind the crowd or an "owner experience" that we donated to a fundraising auction. But they all start and end at the same place – conservative plan and flight safety briefing with known crew. We all want to come home.



4. *You recently joined the airlines as well. What led to your decision to enter the commercial aviation world, and how is the experience thus far?*

I never really dreamed of being an "airline pilot" like lots of folks, but as I spent more time around corporate aviation in the photo/marketing side, I got much more interested in flying jets. Then at Oshkosh 2018, a good friend of mine had recently left a lucrative sales career for a regional airline job and told me it was the best decision he ever made. With the regionals pay basically double since I last looked, along with the pilot shortage, it looked like the best time ever to go for it, so I was inspired.

I spent about four months getting the commercial and multi-engine experience to meet the prerequisites and fired off some applications. I was in a training class at Envoy within a month. I'm now a year in with about 600 hours in the jet (E-175), and I have to say it's about the best thing I've ever done. I love every day of it, and it's a little cliché, but it's hard to believe I get paid for it. The flexibility is very compatible with my photo company work, and the income from flying has allowed me to be more particular about the creative jobs I take on.




5. *Can you describe one (or two) of your most memorable photo shoots?*

I enjoy the photo flying so much, most shoots are memorable – but two definitely stand out.

The first is a photoshoot I did with Skycatchers I used to own for a Cessna magazine article about my “fleet.” Apparently, I was the largest private Skycatcher fleet owner with three airplanes. So, of course, I wanted to do a three-ship formation

photoshoot of 162's, probably the only such photo ever taken. What made it particularly memorable was I owned all four airplanes in the shoot. I remember looking at the four airplanes and my four good friends flying them after it was over and just having a proud moment. Only a few short years prior, I was sitting in a corporate cubical job daydreaming about getting my private license. Now I owned and operated four airplanes and my aviation photo company is shooting them for Cessna. I've always lived go big or go home!

But a lot of what I've done has paled in comparison to the 2018 photo shoot at the Cleveland Airshow of all three North American jet demo teams historically flying together for the first time. Through my hard work building a relationship with the Blue Angels, I was selected to be the photographer for this once in a lifetime event. The photo ship would be none other than the Blue and Gold #7 jet with me strapped in the back. After a year of planning, all three jets teams successfully rejoined 22 jets over Lake Erie and we captured some spectacular images. It was truly an amazing and emotional day – felt as though the opportunity completed my journey to the top of my aviation photography. 

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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
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288	GULFSTREAM G-450

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500	GULFSTREAM G-550
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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
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3	JET COMMANDER 1121B
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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
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Retrain Your Brain

Confidence and Airmanship Training

by Jared Jacobs



Following my first exposure to Upset Prevention and Recovery Training (UPRT) in early 2019, I gained a huge respect for this type of training in a real airplane. It teaches pilots an understanding of the edge of the envelope and allows the body to feel the associated G-forces. A year later, unable to find guidance regarding currency for this type of training, I turned to aerobatic superstar and friend of Twin & Turbine, Patty Wagstaff.

When Patty is not performing in front of thousands of airshow spectators, she and fellow flight instructor, Allan Moore, operate the Patty Wagstaff Aviation Safety in beautiful St. Augustine, Florida (KSGJ). Patty and Allan fully endorse the idea that to be most effective, UPRT requires conditioning and currency. So, I promptly signed up for the Owner/Pilot Confidence and Airmanship Training to further sharpen my skills (and have some fun in the process!).

Ground Training

To start, Allan defines the specific skills we will train. There is inevitably some confusion for the uninitiated when talking about UPRT vs. aerobatic training.

"Let's think of the disciplines we cover in the owner-pilot course as two distinct families of maneuvering. Upset Prevention and Recovery Training is a group of maneuvers that has a strict G envelope: 100 percent of the fleet, 100 percent of the time and 100 percent of the scenarios can be recovered from in the +0.5 to +2.0 G envelope. To accomplish this, we will use a very short mantra - 'Look. Unload. Roll. Recover.' Everything that we teach for UPRT will follow those guidelines. Period. The next set of maneuvers that we will cover are aerobatic maneuvers. When we talk about aerobatic maneuvers, we are talking about events that are into the negative G's and about 3 or more positive G's."

I find his definition helps eliminate the gray areas in my mind and gives an accurate representation of the training to come. This is a hybrid course that will fully cover the UPRT material then introduce some acrobatic skills for added understanding and comfort. Allan moves on to make another point.

"Virtually every loss of control (LOC) event that we are able to look back on and study is preceded by a stall. This is curious because every pilot receives stall recovery training in nearly every certificate that they endeavor to obtain. So, let's revisit the basics and define a stall: A stall occurs when your wing exceeds its critical angle of attack, and as a result, loses a portion of its lift."

This information is very familiar to me and likely to every reader here. However, as he accurately stated, stalls lead to a large majority of LOC incidents, which account for the largest number of fatal accidents in all aviation segments. How could this be? Especially when you consider the information that he provides next.

"FAR 23 and FAR 25 state that following a loss of lift event, an airplane must have a pitch down moment. If an airplane doesn't meet this requirement, then a stick pusher will be installed. In any case, the natural (or pusher assisted) pitch down following a stall generates a half G for about a second."

Said another way, stalls are self-correcting if the pilot would allow the airplane to pitch down. So, what is happening? Why are pilots not allowing the airplane to follow its built-in characteristics and recover? The short answer is that our instincts get in the way. Patty explains this phenomenon in her article "Upset Prevention and Recovery Training: From Skeptic to Convert" (Twin & Turbine, June 2019). Allan explains it similarly today.

"Every human likes to walk around at 1G. When we fall down we always clutch or brace. This reaction is built into humans from day one. When an infant is born the doctor will test its reflexes by holding it in their palm and then mimic a falling sensation. A properly functioning neurological system will cause the baby to tuck in and cry. This is called the Moro reflex, and while it's called 'startle factor' or 'clutch reflex' in an adult, the reflex remains with us our entire life. When a pilot is exposed to less than 1G following a stall, our reflexes kick in and the response is the same...except there's no crying in stunt flying!"

Patty has identified desensitization training as one of the keys to the school's curriculum. This is the first time I have heard of this as a focus of UPRT but it resonates with me. We will conduct maneuvers repeatedly to train out the startle response to reduced G-forces. Once the abnormal feels normal, we give our brain the chance it needs to provide the appropriate inputs to correct the scenario. This also gives added validity to the idea that UPRT is as much a currency item as any other discipline; without practice and familiarization, our skills could deteriorate and reflexes could take over in the heat of the moment.

Flight Training Part 1

We level off the Extra 300 at 4,000 feet, and Allan jumps straight in with a couple of stall demonstrations using only a reduction in angle of attack to recover. While I shadow the controls, he brings the power back with the nose just slightly below the horizon, then pitches up to the horizon to get a good control feel as the aircraft decelerates. He then pitches again to bring the nose up into a landing attitude, and then one final pitch up to bring the nose up a few more inches. Predictably the aircraft gives a little buffet in protest and then the nose drops. Allan is sure to point out the half-G feeling for about a second before beginning to bring the nose back up. I have a go at a few of these stalls before we move on.

Next, Allan uses the same setup but adds a 30-degree bank to show a turning stall. With very similar results we see that there's nothing notably

different about stalling while in a coordinated turn. Following my turning stall practice, Allan demonstrates something new to me that can really only be shown in an aerobatic airplane. We enter a turning stall, recover, and then he immediately pulls the stick back again to induce a second, then third, then fourth stall. With each stall, the nose drops further and further below the horizon, illustrating very clearly that the aircraft truly can stall at any attitude, even with the nose pointing directly down at the ground. I'm thinking just how cool this is to observe when Allan transfers the controls back to me to recover. "Look. Unload. Roll. Recover." Recognizing and suppressing the startle reflex, I successfully do as I'm told.

Next, Allan demonstrates a stall with yaw. He follows the same turning stall procedures but points out that he is adding only a half-ball worth of yaw. Even this small amount of yaw is enough to agitate the stall to the point of starting a spin. As the aircraft rolls over in protest, Allan releases all inputs before the spin can fully develop and I suddenly find myself at the controls of an inverted dive. Reciting the mantra myself this time, I recover the aircraft.

Again, Allan takes the demonstration a little bit further by showing the amount of yaw that can be generated naturally by the airplane if not countered correctly. We lift our toes off of the rudder pedals as he adds and reduces power, observing the nose move left and then right. Similarly, with our feet still flat on the floor we use the control stick to roll left and the nose yaws to the outside of the turn. Both of these yawing moments produce a yaw greater than a ball-width deflection on the inclinometer which, as we just saw, was more than enough to aggravate a stall into a spin. This is another demonstration that I have never seen illustrated so clearly before but has made a big impression.

Having seen the ingredients that can lead to a spin, I set up using the same simple stall initiation, add some rudder pressure in the last few seconds of the stall, and the Extra's wing rolls us over and enters a spin. I continue

holding these control inputs to be sure that the spin fully develops. After a full rotation in the spin, I talk my way through the spin recovery: P.A.R.E. "Power – idle. Ailerons – neutral. Rudder – opposite rotation. Elevator – forward to break the stall, then center the rudder pedals before recovering from the dive."



Allan notices that I have subconsciously used a bit of left aileron as I am pushing in the left rudder on the recovery, so I work to counteract this instinct in the next few spins. This again impresses on me the importance of staying "current" on my UPRT. Counteracting the subconscious is tough work.

To round out our flight, we do a brief introduction to aerobatics in the form of a two-point aileron roll. Allan explains that if we were performing this maneuver to the right, we would trace an uppercase "D" with the nose of the aircraft. With that image in my mind, I begin by bringing the nose up, pausing briefly to allow the aircraft to come back to 1G, then roll the aircraft to inverted just as we are passing the horizon and stop the roll there. From here it's time for the training to kick in. I look to find the horizon, unload to be sure that I am not pulling the aircraft any further into the dive, roll right 180-degrees again to bring us back right side up, and then recover by pulling the nose back to the horizon that I had found.



With all of this fresh in my mind, Allan makes a few points. First, being inverted and nose low is not something most pilots are accustomed to, so doing this maneuver helps us to build up a tolerance (desensitization) to these sorts of attitudes and lessens our startle reflex. He also points out that through the entire maneuver we never went into negative G's, which is surprising to me. The feeling simply cannot be replicated by a simulator,

so we give it a few more go's to set the sensation in prior to heading back to the airport.

Flight Training Part 2

With the foundation laid by Allan, now comes the masterclass with the namesake of the academy: Patty Wagstaff. Allan is a teacher at heart, with a knack for breaking the complex down to its base parts. At the core of Patty is a performer. This was immediately made clear on the takeoff roll.

"After takeoff, I always hold the nose down and let it accelerate. I don't rush to get into a high deck angle climb because I can't see anything like that, and I'd rather have more speed if something happened."

And she wasn't joking. As I've observed her do from the grandstands at numerous air shows, just after breaking the ground, Patty holds the nose over and tracks down the centerline only feet off the runway. With the departure end rapidly approaching, she releases the forward pressure

and the Extra shoots skywards. "Plus, this way is more fun," she adds. I'd have to agree!

Once we reach the practice area, the format of the flight is similar to my first. She spends a few minutes observing how I handle the airplane with a few basic aileron rolls. "I really like to teach aileron rolls first because it forces people to use the controls independently, which is something we rarely do," she says. This is something I saw for myself in my spin recovery when I incorrectly used aileron while applying rudder pressure.

At this point it feels like I am working my way through a progressive check in which she is checking my knowledge, skills and comfort with the maneuvers that she knows I already covered on my earlier flight. Where she sees the chance to add to my understanding or improve on my performance she does. And when there's nothing to be added, we move on. Thanks to Patty's cool attitude, I have no nerves about the maneuvers

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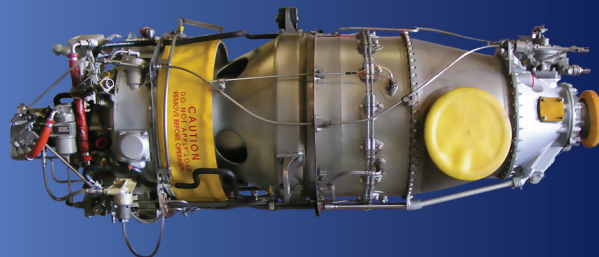
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as she asks me to fly them because we are training to proficiency. In this way, we work through many reputations of stalls, turning stalls and spins in pretty short order. With the UPRT portion completed and validated, this left us with some time to focus more on the aerobatics portion of the course.

In general, the second flight of the course is a review of the first with a focus on spins, along with more aerobatic maneuvers – if the student wants them. This being my fourth aerobatic training flight, I ask Patty to check my fundamentals so we can work on expanding my aerobatic repertoire. With rolls already completed earlier, the obvious skill to work on next is loops. Patty instructs me through a 3G pull, pointing out where I should be looking for visual cues as we progress. She then suggests a half Cuban 8 before progressing to the full Cuban 8. Mimicking the same 3G pull from the loop, we pull the Extra up through a little over half of a loop before performing a 180-degree aileron roll on a

45-degree downline to bring us back to right side up.

Next, we simply stitch two of those maneuvers together to complete the full Cuban-8. To add complexity, Patty talks me through a half reverse Cuban where we pull up on a 45-degree line, roll to inverted, then pull ourselves around the remainder of an inside loop. A slight variation on the original maneuver, but it gave me a good opportunity to work on rolling to inverted as well as elevator control from low energy to high energy in the loop.

Somehow, I made it to this point in the flight before it struck me just how unique it was to be sharing the controls with a U.S. and international aerobatic champion and inductee to the National Aviation Hall of Fame. Any maneuver that I could come up with to request, there was quick “OK!” before she was talking her way through the next mind-bending procedure while I struggled to stay conscious. Later, Patty listed out each maneuver we completed and it was not brief: rolls,

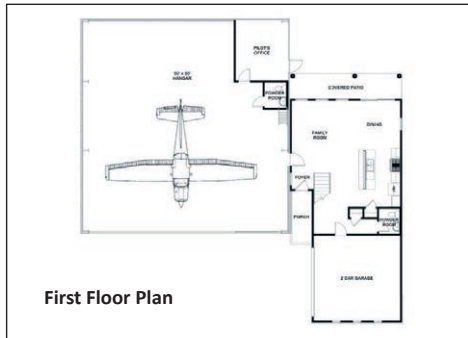
loops, half Cubans, half reverse Cubans, Immelmans, rolls on top of loops, humpty bumps, hammerheads, vertical point rolls, inverted spins, upright flat spins and inverted flight.

I wish I had the space here to include in-depth detail of each maneuver and how it made positive impacts on my aviation skillset, but suffice it to say that I gained everything I was hoping for and more from the aerobatic portion of the course. It solidified in my mind that the benefits of learning aerobatics along with a UPRT course is twofold in training my body to handle G's and react correctly and safely to unusual attitudes – all while having fun. And pro tip: If you get the incredible opportunity to fly with Patty Wagstaff and she offers a low cruise along the beach – take her up on it! **T&T**

Jared T. Jacobs is an ATP-rated turbine pilot, instructor and mentor. He currently flies corporate aircraft both single-pilot and as crew for a Fortune 500 company. Jared can be reached at jaredjacobs2@gmail.com.

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Stuff Happens

by Kevin Ware



As much as we try to personalize them, airplanes are above all mindless mechanical devices that wear down and break at regular intervals, in spite of our mechanic's best efforts. When this occurs, the pilots involved (and I am definitely one of them) invariably tend to blame themselves and lie awake at night thinking about how they could have handled the problem differently. We are almost always our own worst critics. But the truth is, in aviation, "stuff happens" regularly even though we pilots have exalted skills and try to prevent them. A couple of events that occurred at our airport in the past year illustrate this point.

King Air Landing Gear

A King Air 200 flown by one of our professional pilots (with more than 10,000 hours in the make and model) returned from a trip to California last fall. He started the LPV approach to Runway 11 with the weather at about 1,500 overcast and 4 miles visibility.



Everything was going fine until the yellow glide slope needles centered and (while still in instrument conditions) the pilot pulled down the handle with the white round wheel on its tip to lower the landing gear. Initially, there was the typical growl and whine as the mechanism under the floor started into action, but then it seemed to slow down a bit, almost to a stop. This was followed by a loud bang, which definitely got his attention and scared the daylight of the passengers sitting in

the back. The pilot took a glance at the gear lights, where he found two greens for the mains but an "unsafe" condition for the nosewheel.

While pondering the problem, he broke out of the clouds and was able to see the runway about a mile ahead of him and a thousand feet below. Wisely deciding not to land with an unknown gear condition, he broke off the IFR flight plan and began circling the airport in low but flyable VFR conditions. As safely doing so required nearly all



of his attention, he asked the passenger in the right seat (the King Air's owner and a private pilot) to dig out the emergency checklist and read the portion dealing with unsafe gear conditions.

Three or four turns around the airport later, they were unable to solve the nosewheel problem by reference to the checklist and decided to land while holding the nosewheel off and long as possible after touchdown. This was communicated to the growing crowd below on Unicom, whose morbid curiosity caused them all to hustle outside to see the upcoming airport event. The approach was made from the east to Runway 29 as the departure end of that runway was more overrun friendly than landing the opposite way. Touchdown occurred right on the black tire marks of the touchdown zone, with the airplane nicely centered on the runway. Both PT6 engines were pulled to idle cut off, the wheel held all the way aft, and the airplane deftly kept over the center line by fancy rudder pedal work. Care was taken not to apply braking as the deceleration would have promptly lowered the nose. But the inevitable could not be permanently delayed, and at first slowly, and then with a loud nasty crunch, the nose smacked onto the runway – albeit exactly on the white line.

There followed some quick deceleration, with the airplane stopping in less than 800 feet. The next problem: how to get the passengers quickly evacuated with the nose on the ground, the tail way up in the air, and the door some eight feet above the surface. Fearing that something bad was yet to happen, however, they all made the jump. Luckily, there was not a single injury.

As the pilot and passengers stood on the runway looking a mixture of

sheepish, guilty and relieved, the airplane was then surrounded by ground vehicles from the airport staff and FBO – all wanting to help and see what had caused the event.

As it turned out, the nosewheel activation mechanism on a King Air looks like some Rube Goldberg device stolen from a bicycle repair shop during the 1950s. It has sprockets and a long bicycle-like chain that runs from the motor under the floor to the nosewheel well just behind the pilot. The bang occurred when the chain broke, having become jammed, which caused the motor to slow down just before the noise occurred. With the nosewheel up, the impact damaged the gear doors and radar dome but little else. The propellers were still turning but not under power and suffered minor damage.

The airplane's nose was jacked up and placed on a helicopter dolly, then towed into the FBO's hangar. Four months and \$600,000 later, all the damage was repaired, and from looking at the airplane, you could never tell what had happened. The owner's wife, however, remembered the event all too well, and before long, the turboprop was replaced with a Learjet.

The pilot, for the most part, received kudos from those observing. There were some "Monday morning quarterbacks" (MMQs) who faulted him for not flying about 20 miles away where there was a 10,000-foot runway and fire service at the airport. But, I thought the pilot handled it very well. By getting the passenger in the right seat involved, he made good use of all cockpit resources, and his airmanship in keeping the airplane centered on the white line was outstanding. Sometimes stuff just happens.



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Gulfstream 150 Overrun

Some months went by without any exciting airport events and spring arrived. Then, we had one of our business jets, a Gulfstream 150, make a departure for the east coast in similar weather conditions, only to have an HYD FAIL red light show up on the annunciator panel right after liftoff. The crew immediately leveled off the airplane while under the cloud base at

about 2,000 feet and began a slow VFR circle back to the approach end of the runway they had just departed. The co-pilot began running the HYD FAIL checklist, which is nearly four pages long in that particular jet. Sort of like the co-pilot in the Hudson River airline event, he was unable to complete the entire thing before they were set up on a long final.

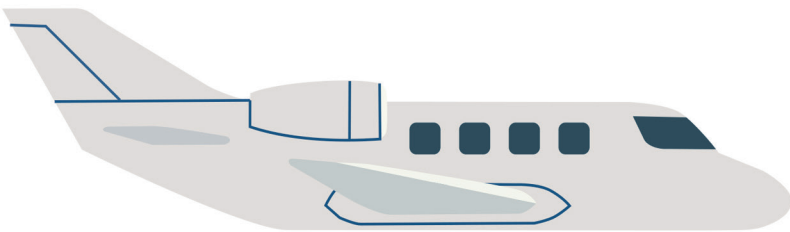
Touchdown occurred nicely right in the zone, and the brakes were

applied only to find there was not enough hydraulic pressure to do much. The thrust reversers came out, and the power pushed up to take advantage of all the deceleration they could possibly muster. Again, the inevitable could not be permanently postponed. With the runway end rushing up at them, the pilots shut down both engines to avoid ingesting a substantial amount of FOD they knew was going to be kicked up when the airplane rolled off the pavement. Off the end of the runway they went, somewhere between 60 and 80 knots, only to then feel a level of deceleration unknown to most pilots unless accustomed to landing on aircraft carriers.

As it turned out, the overrun area had been soaked repeatedly with rain during the previous two weeks, and the dirt under the grass off the runway end was more like soft mud than anything solid. This caused the main gear and nosewheel to sink tire deep, bringing the airplane to a complete halt in about 1,000 feet. All the



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passengers gently stepped down just a foot or so from the door to the ground, then stood about 100 feet away as all kinds of ground vehicles, and even the local sheriff showed up. The airport was closed, and a local truck wrecker was called to remove the airplane. This was artfully done with little to no damage to the fuselage by placing airbags under the "lift" points of each wing, blowing them up until the tires were clear of the mud. Then pushing steel plates borrowed from a local paving company under them and towing the airplane backward, moving the plates serially until reaching the pavement.

This, of course, took all day in rainy, cold weather, during which time the runway was closed. The passengers and crew, however, were seemingly not too dismayed by the event. Forty-five minutes after exiting their aircraft and cleaning the mud off their shoes, they borrowed one of the Learjets also on the field and owned by another company, and were on their way to Washington, D.C.

The "Monday morning quarterback" report after the event suggested the pilots should have declared an emergency, climbed out to 10,000 feet or so to top the clouds, then taken the time to run the entire checklist. If at that point there was any possibility of brake failure, they should have changed the destination from the airport they had just departed to one some 20 miles away at which there was full-time fire service and two miles of runway. But again, I am not so sure that criticism is deserved or valid. Although running the entire checklist might be the correct decision in the simulator, in real life flying, with the runway still visible under you and a hydraulic failure of unknown significance on the annunciator panel, getting the thing back on the ground as soon as possible would seem (at least at the time) the safest thing to do.

In aviation, "stuff happens" on a regular basis. And, if you fly enough, it is only a matter of time until one of these events happens to you. When

(and it is "when" not "if") this occurs, before getting too self-critical, or paying much attention to the MMQs, ask yourself this most important question: Did your decision process during the event result in everyone walking away without injury? If so, pat yourself on the back. You did just fine when the stuff happened. **T&T**



n 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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En Route

Photography Book Spotlights Owner-Flown Jets

by Jessica Ambats

"Jet Dreams" is a combination of my two passions: aviation and photography. It's a high-end coffee table photography book about jets, entrepreneurs and dreams.

Jet Dreams will feature awe-inspiring jets in spectacular locations, but it's about something bigger: chasing dreams. As kids, many of us looked up at the sky each time an airplane passed over. We dreamed of flying. Jet Dreams is about those, who through hard work and entrepreneurship, achieved their childhood dreams.

It's the only photography book about owner-flown jets. They are entrepreneurs of all kinds - inventors, creatives, techies and more - who


are passionate about flight. Each time they rotate off the runway, the little kid inside them cheers "yes!" This book is about that kid in all of us.

- Jet Dreams is a book of photographs of jets over stunning backdrops.
- It's about thrills, precision and managing risk.
- It's about teamwork and the pilots who fly the planes.
- It's about angles: light angles, bank angles, camera angles.
- But most importantly, it's about achieving your dreams.

Pre-sales are available on Kickstarter. The campaign will fund the self-publishing project. Special



backer options include an air-to-air shoot of your aircraft, to be featured in Jet Dreams or a subsequent photography book (depending on airplane type).

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En Route

Garmin Autoland Achieves FAA Certification

On May 18, Garmin announced Federal Aviation Administration (FAA) certification and availability of the Garmin Autoland system in the G3000 integrated flight deck in the Piper M600 SLS. In the event of an emergency, Autoland will control and land the aircraft without human intervention. The award-winning Garmin Autoland system is also featured on the Cirrus Vision Jet and Daher TBM 940 and will soon be available on these aircraft, with additional aircraft approvals to follow.

"What started as a vision to develop the world's first Autoland system for general aviation, became a reality



today as we deliver one of the industry's most significant innovations," said Phil Straub, Garmin executive vice president and managing director of aviation. "Congratulations to the entire Garmin team who contributed to the development and certification of Autoland – one of the industry's most forward-thinking technologies that will forever enhance aviation safety and save lives."

In the event of an emergency, the pilot or passengers on board the

aircraft can activate Autoland to land the aircraft with a simple press of a dedicated button. Autoland can also activate automatically if the system determines it's necessary. Once activated, the system calculates a flight plan to the most suitable airport, while avoiding terrain and adverse weather, initiates an approach to the runway and automatically lands the aircraft – without pilot or passenger intervention. Learn more at www.garmin.com/autonomi. **T&T**

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Chris Crisman/TNC/LightHawk

An advertisement for LightHawk Conservation Flying. It features a photo of two men, one in a white cap and the other in a red vest, looking at a map. The background is a light blue sky with a white airplane. The text promotes conservation flying and provides a website link.



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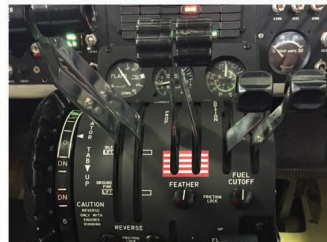


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From the Flight Deck

by Kevin R. Dingman



The Loneliest Number Piloting Planes During a Planetary Pandemic



The swine flu (H1N1 from Mexico), bird flu (H5N1 from Asia), Ebola (from The Congo), and the seasonal flu (influenza A or B) kill a half-million or less every year. The Spanish flu of 1918 (H1N1 from Kansas) killed 50 to 100 million of us and was the last time humanity faced such an attack on a planetary scale. We have yet to calculate the worldwide physical and economic toll of COVID-19 (SARS-CoV-2 from China).

In our attempt to lower this toll, we have new terms in our collective vocabulary: flatten the curve, stay-at-home, social distancing, N95 mask, ventilator, essential worker and Wall Street's historical marker: "The Great Lockdown." All of which

describes our efforts to lessen the number of infections, hospitalizations and fatalities. All segments of society have been affected and transportation is getting clobbered.

Yep, Still Here

While a foreboding and indiscriminate virus has been pursuing and pruning our planet's population, some of us continued to fly. Annual recurrent training in the Duke was due, so I flew to Kentucky and completed mine just ahead of a thunderstorm. My first-class medical due in March was completed just as lockdowns were implemented (more about exemptions for medical exams and other FARs coming). And since the airlines must maintain essential air service, another

chunk of B-737 time hit my logbook in April. But the terminals and flights were empty, airport restaurants and many TSA checkpoints closed, and the airways void of contrails. After flying in the U.S. airspace system for a few decades, you get a feel for sector boundaries, or at least how long you talk to each of them. But because of the empty skies, I've found myself querying ATC more often: "Still there?" "Yep, still here" comes the reply. FL 400 is even more solitary than before.

No is the saddest experience you'll ever know.

I just read "Endurance" by Captain Scott Kelly (USN, ret.). It's the life story of F-14 test pilot/astronaut Kelly and

centers around his year-long research mission aboard the International Space Station. The isolation Captain Kelly endured is similar to our new normal. Most notably, the reduction in person-to-person interaction and revocation of civil liberties. Many of our routines have the word “no” attached to them: no, you can’t do that; no, you can’t find any of that; no, you can’t touch them; and no, you can’t go there – including places of work and worship. It’s a sad experience.

As of this writing, golf courses are opening as are businesses in some states. But a few major events and activities have already succumbed to the pandemic: Sun ‘n Fun, the summer Olympics, the Kentucky Derby, the Boston Marathon, NFL, NHL, MLB, Disney theme parks, Burning Man, the Tony Awards and the Cannes Film Festival, just to name a few. While some have been tentatively rescheduled for the fall, at T-minus three months, on May 1, aviation’s largest family reunion, Oshkosh AirVenture, was canceled as well. Between now and the fall, things will be weird.

Out in the Country

Our load closeout (the Part 121 version of weight-and-balance) numbers have to be fudged in order for the flight planning computers to compute. They don’t understand if the passenger count is zero; so, we lie to it and tell it “one” passenger. EDCT’s (Expect Departure Clearance Time) don’t exist; there is no waiting to push back from the gate due to traffic, and taxi time to the runway is short. Pitch attitudes during segment one of the takeoff (first 1,000 feet or so) have rivaled that of fighters. Traffic on SIDs, en route and on STARs is sparse. Vectors for spacing and speed adjustments are scarce. Because of our very low gross weights, approach speeds are within 15 knots of what I use in the Duke.

The company’s automatic parameter recording system, FOQUA (Flight Operational Quality Assurance – pronounced “Foe Quaw”), has noted longer touchdown points and higher pitch attitudes in the flare due to extremely light loads. And idle thrust after landing has resulted in 30 to 40-knot ground speeds. We don’t have to

wait for an open gate, and we exit the airplane into another empty terminal. Electricity to public lighting, escalators and TVs has been reduced. To say that hotels are apocalyptically abandoned is eerily accurate. Many times, my crew and I are the only guests in the hotel. Coffeemakers and microwave ovens have been removed from the rooms. With no one else in the hotel, enough time must be allocated to let the shower run for 10 to 15 minutes for the hot water to travel from the basement to the 15th floor. Uncertainty abounds, which causes consternation among not only crew members but their families.



Two can be as bad as one; It's the loneliest number since the number one.

While we are on the road, the families of aircrews worry that moms, dads and spouses are being exposed to COVID-19. They ask about the virus, the ATC system, our future at the airline and the people we carry. At \$25 per ticket to just about anywhere, we are flying some “once-in-a-lifetime” customers. On a leg from BOS to ORD, my FO’s daughters, Ayannah and Aheli, sent along toys to keep us safe from the virus and “unique” passengers. We always need to wear our PIC hat, but during this crisis, the captain hat takes on additional importance. Passengers and crew need to be reassured that we’re following CDC recommendations, the airspace

system is functional and that their pilot is healthy.

Complying with curve-flattening techniques in a Gemini-like, two-person cockpit, however, can be problematic. We’re wiping down our seats (that would be the airplane seats), the throttles, yoke, thrust reversers, oxygen masks, steering tiller, hand mics and all cockpit switches. We wear gloves and masks while using sanitizing wipes on everything subject to our touch from shopping carts and groceries, to door handles, toilet seats and aircraft controls. Crew briefings, hellos, goodbyes and conversations are void of hugs and handshakes. As different as this flying is, many in GA are not flying at all.

It's Just No Good Anymore Since You Went Away

As we forecast the fate of our population and economy out the backside of the pandemic, we’re reminded that neither us nor our airplanes do well when inactive for a month or more. For our airplane it means piece-parts may become sticky, dry out, go flat, act weird or just plain not work at all. For us pilots it can mean expired medicals, late training, loss of landing and instrument currency and for some, a leave of absence or furlough. Since many of us are away from flying due to lockdowns and social distancing, the FAA has granted some exemptions to the FAR’s:

- Airmen whose medical certificate expires at the end of March, April or May, but was unexpired as of March 31, 2020, are permitted to operate flight inside and outside of the United States using their current medical until June 30, 2020. The FAA will take no certificate actions due to expired medical certificates. The FAA determined that those subject to this temporary measure may operate beyond the validity period of their medical certificate but all standard prohibitions for medical deficiency still apply.
- The requirement to don O2 masks when one crew member is out of the cockpit is now only when below 41,000 feet.

- Flight attendants may relocate from the seats they would normally occupy so they can observe social distancing. FAs are also excused from having to demonstrate the use of certain emergency equipment including life preservers and oxygen masks.
- Recurrent training due dates for designees, Flight Standards Organization Designation Authorization and Part 121 crew members is extended and may temporarily use alternative methods to conduct certain emergency procedures that require pilots to don protective breathing equipment or oxygen masks in recurrent training, checking, or evaluation.
- Air carrier personnel may temporarily perform flight dispatch and flight following duties from their homes.
- Pilot training schools may use distance learning programs or suspend operations.

Multiple GA groups were signatories on a letter to the FAA requesting the following additional exemptions during the pandemic:

- Extension of 14 CFR Part 61 pilot currency requirements, e.g. flight review, IPC, PIC/SIC proficiency checks.
- Guidance that reexaminations or paperwork inspections in person (such as logbook inspections under 61.51, or maintenance record inspections under 91.417) be held off or at least be conducted electronically during the current social distancing safety protocols and directives regarding non-essential activities.
- Extensions for certified flight instructor certificate renewal, expiration, and endorsement periods, knowledge and e-exams, practical exams, filing of documents under 14 CFR Part 13 and aircraft maintenance and continuing airworthiness requirements.

The Show Must Go On

As of this writing, except for some Part 121 landing currency rules and an SFAR for instrument proficiency (Special FAR for COVID-19 relief pilots only...within the nine calendar months preceding the month of the flight...and the pilot must have logged, in the preceding six calendar months), the FAR's for landing currency, flight reviews and IPC/PIC/SIC proficiency checks for most of us have not changed. So, in order for the show to go on:

No pilot may act as pilot in command of an aircraft carrying passengers unless that person has made at least three takeoffs and three landings within the preceding 90 days in an aircraft of the same category (airplane, glider, rotorcraft, balloon), class (SEL, MEL, helicopter) and type (C-525, G650, B-737) if a type rating is required, and if tailwheel airplane, the landings must be to a full stop. Night currency also specifies category, class and type and the three takeoffs and landings

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must be to a full stop during the period beginning 1 hour after sunset and ending 1 hour before sunrise.

And:

A person may act as PIC under IFR or in IMC if within the 6 calendar months preceding the month of the flight, that person performed and logged at least the following tasks and iterations in an airplane, powered-lift, helicopter, or airship, as appropriate, for the instrument rating privileges to be maintained in actual weather conditions, or under simulated conditions using a view-limiting device that involves having performed the following: six instrument approaches, holding procedures and tasks, and intercepting and tracking courses through the use of navigational electronic systems.

On The Road To Shambala

No matter where the virus came from: bats, monkeys, mice, men or aliens; whether it's engineered or naturally occurring; whether it escaped or was released; whether a conspiracy or complacency, and whether it's here to stay or gone by Christmas – like when in the cockpit, keep your wits about you, make good decisions and work the problem. History will allow for analysis, reflection, blame and lessons learned. In the meantime, let's get through it, get back on the road and back into the air. The mantra of the day is that we are all in this together, and so it is. Be safe, my friends. **T&T**

Authors note: A grateful nod of appreciation to Three Dog Night for the title and subtitles.

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.

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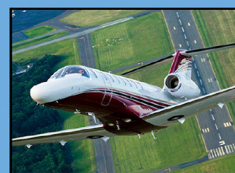
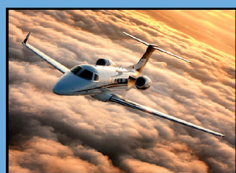
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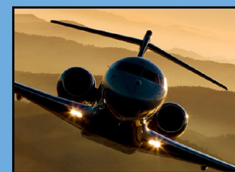
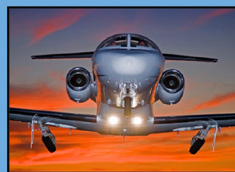
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On Final

by David Miller



First Flight Back



'Twas the night before May first, when all through
the house
Not a creature was stirring, Patty and Peaches asleep
on the couch
Foreflight on the iPad by the chimney with care
In preparation for my first flight in six weeks
though I dare
I sprang to my car for the drive to Dallas Love
Donned in my flight suit and face mask and gloves
When what to my wondering eyes did appear
But a solemn, lonely King Air standing tall on its gear
The FBO was empty not a person in sight
The ramp deserted in the morning's first light
As I copied my clearance from the guy with ATC
A single Southwest Boeing was all I could see
Delta Mike cleared as filed radar vectors to Mesquite
A 20-mile flight to exercise my fleet
Now Dasher now Dancer now Prancer now Vixen
Up came the throttles as I taxied into position
Left turn one hundred climb and maintain three
Contact departure on twenty-four tree
To the top of the clouds to the top of the mist
As I grabbed the heading bug and gave it a twist
Cleared ILS one eight call tower twenty point three
All alone in the airspace only the controller and me
My first landing since March was really quite good
On this strange COVID morning as all pilots understood
Fly safe. 

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.



CHIN COWL



PITOT COWL

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.



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