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Editor's Briefing by Rebecca Groom Jacobs



\$100 Hamburger

Putting a finger on what exactly is "the best part" of aviation is difficult. But there is one unsuspecting activity I will always appreciate as it combines several of my favorite things (i.e. airplanes, outdoors, food) and is one of the simplest joys: the \$100 Hamburger.

It's not the "burger" itself that I love (although I'll take the burger pictured below any day) – it's how perfectly it emblemizes the capability, freedom and fun that airplanes can provide. In actuality, the meal itself is nothing more than an excuse to open the hangar doors and spread our wings.

And experienced in providing some of the finest excuses to fly is the "\$100 Hamburger" travel guide. This infamous book has been a staple among private pilots since the first edition was released in 1998. The publisher defines the famed expression as the following:

The \$100 Hamburger is pilot slang for the practice of flying away for the sole purpose of grabbing lunch at a distant airport. The check for the meal is modest but the costs of flying your own plane to get to it are very high. The joy of these pilots' passion for flight is shared by the countless patrons who fill airport restaurants to watch them arrive and depart and dream that one day they might be at the controls.



A personal favorite – the "Stearman Burger" at Stearman Field Bar & Grill in Benton, Kansas.

Of course, \$100 may not cut it any more with increased fuel and rental prices, but that hasn't stopped pilots from continuing to enjoy the more than 1,600 airport restaurants around the country.

Each year, John Purner, founder of "The \$100 Hamburger" polls the website's 54,000 subscribers to find the top airport restaurants around the country. He recently unveiled the 2019 "Best of the Best." They are presented below in alphabetical order by state and city within state. (You might recall the first one listed was featured in our March cover story).

- Gaston's Restaurant Lakeview, AR (3M0)
- Flo's Airport Café Chino, CA (CNO)
- Harris Ranch Restaurant Coalinga, CA (308)
- The Downwind Cafe Daytona Beach, FL (7FL6)
- 57th Fighter Group Restaurant Atlanta, GA (PDK)
- Pilot Pete's Chicago/Schaumburg, IL (06C)
- Rick's Cafe Boatyard Indianapolis, IN (EYE)
- The Beaumont Hotel Beaumont, KS (07S)
- Bistro Le Relais Louisville, KY (LOU)
- Jake's Joint Ardmore, OK (ADM)

So, if you are looking for an excuse to exercise your airplane this Spring and check off a few of the restaurants above, pilots can purchase the guide on Amazon or subscribe to the website at *www.100dollarhamburger.com*. The latest edition, released in December, also includes information about FBOs, rental cars, museums, hotels, golf courses and camping. Happy eating!

Rehau Harde

Ps. In this issue, you will notice Twin & Turbine's new look taking form. The magazine will retain the content you are familiar with, but it will be presented in an updated, clean way. We hope you like what you see and continue to enjoy the only monthly aviation magazine that speaks solely to twin and turbine owner-pilots.

Airmail

In Response to Kevin Ware's "A Medical Look at Hypoxia" (December)

You may recall that after your recent article on hypoxia in Twin & Turbine I contacted you for your recommendations on an appropriate cylinder for my JetProp. Subsequently, I ordered a 9-cubic foot M size cylinder, regulator and carrying case for \$168 (a mustache cannula was already in my possession). The local FBO at VNY wanted \$70 to fill it. Instead, I went to a medical gas supply house, and after showing my medical license, they filled it for \$17.25.

Last night, I had the opportunity to try it out. I was flying an Angel Flight, and after deplaning my passenger in Redding, California, took off again for the 1:45 flight back to VNY. It was well after dark, with cloud tops around 20,000. After leveling at FL250, the pulse oximeter showed my SaO2 to be around 85 percent, with a cabin altitude of 9,500. I put on the cannula with a flow of 1 LPM. After checking a couple of minutes later, my saturation sat around 93 to 94 – a much better place for the oxyhemoglobin dissociation curve! Needless to say, it remained on until the cabin was below 5,000 on my descent. Based on your recommendation, this is my new SOP. Thanks again for your sage advice.

Dr. Stuart Bloom

Great article on hypoxia – thank you. It assisted me in having my commercial oral examiner's eyes glaze over while I explained the workings of the SA node.

See the lead article in IFR Refresher, Feb. 2019, vol 33, issue 2. They may have misdiagnosed what occurred to this 78-year-old pilot. Lastly, I bought an oximeter and portable oxygen tank to accompany me in my Cirrus SR22. Thanks again for your insights!

Dr. Henry Koch, Ph.D.

A recent reader email raised the question of the effect of cabin pressure on an auxiliary O2 bottle. I have one of these tanks, which is rated at 3,000 psi and can only be filled to that pressure with a booster. At sea level, the atmosphere is 14.7 psi, or about 0.5 percent of the tank rating. In a perfect vacuum, the tank differential would only increase by 0.5 percent, and the pressure relief valve on his type of tank is typically 5,000 psi. One would have to have a structurally defective tank and be very unlucky to have a problem with a cabin depressurization, but hey, nothing would surprise me when flying.

Mike V.

In Response to Scott Kraemer's "Listen to Your Body" (January)

I would first like to thank you for sharing your personal experience. Second, as a physician, I see so many people who ignore the warning signs their bodies are telling them and live lifestyles that are not conducive to living long and healthy.

In the pilot population, however, I think some people get a false sense of security because they have been issued a medical certificate. Your case shows how inadequate the FAA medical certification system is for promoting good health. All it does is certify an airman as being fit to fly for the duration of the certificate. It does not look deep enough into one's fitness level to be able to predict how healthy and how long one may be expected to live. So, I hope more pilots will heed your advice and realize that they need to do more to take care of themselves more than just passing an FAA medical exam every few months or years.

JP Soldo, DO

In Response to Kevin Dingman's "Debrief" (January)

In your January article, I picked up on a simple and obvious point but I hadn't thought to do it myself earlier. Almost since I started flying, I've taken notes during the flight to help me improve (the debriefing). I normally write these in one of the following places: my nav log; the paper pad that I have on a kneeboard where I write clearances and weather; a separate pad of paper; or a Post-It. I even have some symbology that has evolved over the years to be able to quickly jot down such notes quickly.

I've been very good about following up from my notes but then I just toss them away afterwards. Your point about transcribing them to a persistent journal makes total sense but I hadn't considered it. I have some physical moleskin type journals I've been given that would be perfect. I make extensive use of notetaking and journaling software that would also be great. Hopefully, I'll later be able to look back on years of lessons learned. Thanks a lot, and keep up the great writing.

Marc Dulude

In Response to David Miller's "Flying with a Mentor" (January)

I enjoyed your article very much. It is interesting that you and I have many of the same experiences. I have been flying since the late 70s and I recall a similar time. I have always believed in two pilots for business, and have had a professional pilot on my payroll for most of that time – a total of four of them. For personal use, I almost always fly single pilot in case I need to sit on the ground for a day, I can adjust. Interesting in that your formula for a mentor I applied to my professional list, and I think I am two for four. If I had applied your reasoning, it might have been much better. Take care and fly safe.

Ron Fedrick

Position Report



Avoiding the Strike



"It came out of nowhere."

If you have every experienced a bird strike or know someone who has, these words might sound familiar. I admit that I uttered them myself recently when a crow-sized bird smacked against my windscreen shortly after I rotated on takeoff. Thankfully, the size of the bird resulted in my plane winning the smack-down, but left carnage along the fuselage and on the horizontal stab. The plane experienced no damage, but the strike resulted in a very messy cleanup job.

Several years ago, my husband was descending into the Kansas City area and a perfectly formed "V" of Canada geese appeared in the upper left quadrant of his windscreen. He quickly maneuvered away from the feathered missiles, hoping to miss them. Then he heard a "THWAP." The last goose in formation met an untimely death against the outboard leading edge of the left wing. Although what was left of the goose departed, a large, flat indentation was left behind. The aircraft's controls and flying characteristics were normal, so he proceeded on to our home airport a short 10 miles away.

Both of our encounters resulted in limited damage, but my husband's experience could have been much worse, even tragic should the goose had impacted the windscreen. The repairs were thousands of dollars and the aircraft was down several weeks, which was an inconvenience and a somewhat time-consuming process of working through the insurance settlement. Bird strikes have been a problem for aviation since the beginning of powered flight. The first known bird strike occurred on Sept. 7, 1908 with Orville Wright at the controls. Orville reportedly was flying circles near Dayton, Ohio when he struck and killed a bird that was part of a flock he was chasing. The first bird strike that resulted in a human fatality occurred April 3, 1912. Lt. Cal Rodgers was killed near Long Beach, California, when a gull became entangled in the controls of his aircraft, sending Rodgers plunging to the ground.

Many populations of birds have increased markedly in the last few decades. According to the Cornell Lab of Ornithology, efforts to re-establish the Canada goose in its native habitat in the United States have been too successful. The birds, which are no longer federally protected, have expanded their natural range southward, and many populations of these geese have lost their migratory habit and have become permanent, yearround residents in areas where they previously had visited only during winter. The result is they've become a nuisance for many cities and have been cited as a problem in more than 100 urban areas in 37 states. There are about 5 million breeding Canada geese in North America and the number is growing.

The double engine flameout of US Airways Flight 1549 following an encounter of a Canada geese flock – which become known as the "Miracle on the Hudson" – is a prime example of a goose problem that isn't going away anytime soon.

Likewise, the sandhill crane population in North America has increased fivefold since 1990, creating a threat to aviation. In April 2017, an Airbus 320 struck a migrating crane at 2,000 feet over the Potomac River in Virginia during departure from Reagan National Airport. The bird created a 12-inch dent in the right wing and the pilot made an emergency landing at Dulles International Airport.

According to the FAA, there have been approximately 194,000 wildlife strikes between 1990 and 2017, with about 14,400 of them happening at 700 U.S. airports in 2017 alone. Other facts about bird strikes in the FAA's most recent wildlife strike report:

- Most bird strikes occurred between July and October;
- Most occurred during the day but nearly one-third occur at night;
- Most occurred during the landing phase, but 36 percent occur during takeoff and climb;
- 92 percent of bird strikes occurred under 3,500 AGL. However, there were 27 strikes with commercial aircraft at altitudes of FL200 to FL310 from 1990 to 2017;
- The most damaged aircraft component also happens to be the most expensive one: the engine;
- The economic loss from wildlife strikes totaled \$765 million for the period between 1990 to 2017;
- The bird most commonly struck are mourning doves; waterfowl (ducks and geese) account for only 5 percent of strikes but are responsible for 28 percent of strikes that cause damage to the aircraft;
- Birds aren't the only airport wildlife hazard. In 2018, the FAA received 40 reports of planes hitting coyotes and 24 involving deer;

• A 12-pound Canada goose struck by a 150-mph aircraft generates the force of a 1,000-pound weight dropped from a height of 10 feet.

According to the FAA, airport wildlife management that have been implemented since the 1990s has resulted in a general decline in reported strikes, but the agency said much work remains to be done to reduce strikes. Critically important is that the communities around airports must figure out how to minimize wildlife attractants within 5 miles of the runways. Also, the development of avian radar and bird migration forecasting needs to be integrated into airspace management.

Finally, the FAA wants to hear from pilots when they encounter a bird strike, regardless of whether it caused damage or not. A problem that is not well-defined cannot be properly managed. If you experience a bird strike, go to *www.wildlife.faa.gov/strikenew.aspx* and fill out strike report.

As you fly, keep an eye out for those feathery fiends, even at higher transitory altitudes. As a precaution, consider keeping your landing light on when transiting below 10,000 feet, especially during migratory seasons. It only takes a second for a pleasant flight to turn eventful and very expensive. At the least, you could end up AOG (that's "aircraft-on-goose" in our case). At worse, a bird strike could cause extensive damage and injury – something no one hopes to encounter.

> Dianne White can be contacted at editor@diannewhite.com



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Great Getaways: Lajitas Golf Resort



by Grant Boyd

Any golfers in the audience? Black Jack's Crossing in Lajitas, Texas consistently ranks as one of the best golf courses in Texas by Golfweek, the Dallas Morning News and Golf Magazine. The course is located at Lajitas Golf Resort, an all-inclusive resort offering a wide array of activities, dining and services – all accessible by a private on-site airport.



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Activities and Amenities

Naturally, the golf course is the highlight of the 27,000-acre resort. Accented by the terrain of Big Bend National Park, golfers are presented with spectacular mountain views and backdrops at every hole.

For supplies and carts, guests visit the Pro Shop found inside the historic Lajitas Trading Post, built in 1899. Green fees for 18 holes are \$125 per person and include a GPSequipped golf cart, balls and a cooler. The carts can be utilized either by golfers or anyone looking to take a scenic drive along the Rio Grande river.

The course is an exciting one for amateurs and seasoned golfers alike as it was designed by Lanny Wadkins, winner of the 1977 PGA Championship, eight-time member of the US Ryder Cup team and inductee into the World Golf Hall of Fame.





"While golfers make up around 80 percent of the guests at Lajitas, we also offer dozens of other activities," said Terry Olson, director of sales and marketing at Lajitas Golf Resort.

Olson is referring to such activities as zip lining, paddle boarding, spa packages, shooting, horseback riding, mountain biking, Jeep tours, swimming and hiking. To help navigate the options, the resort's "Activities Desk" is available to assist guests with planning their memorable trip, combining both on-resort and local attractions.

One of the more popular and unique attractions at Lajitas is the Cowboy Action Shoot – or "Wild West experience." Reminiscent of the days when U.S. Army General "Black Jack"





Pershing drove Pancho Villa out of the area, the event allows guests to enter Stargazer Springs (a fictional Wild West town) and shoot a single-action pistol, a side-by-side shotgun and a lever action rifle.

Another shooting activity is the combat course, where guests try their hand at shooting a 9mm pistol, AR-15 and a tactical pump action shotgun. For guests with a competitive spirit, there are timed scenarios available.

Horseback riding is also a common choice among Lajitas visitors. Riders can experience the grandeur of the region on horseback, particularly during the sunrise and sunset trail rides. Champagne, wine and cheese are typical accompaniments on these rides for when riders take short breaks and admire the view.

Olson says that Lajitas is in one of the "darkest skies regions of the world," so some activities at the resort capitalize on this feature, namely the outdoor option of "Dining Under the Stars." Guests can gather with family and friends around an open flame where dinner is cooked in Dutch ovens, unlimited beverages are served (including beer and wine) and live music is played while the sun fades into pitch darkness. The clear night sky allows guests to witness stellar formations and planets often hidden elsewhere.

When it is time for shut-eye, guests retreat to their room at Lajitas' four-star hotel – comprised of more than 17 room styles, each with individual charm. The hotel consists of suites, villas, condos and standard rooms, with several of the options boasting multiple bedrooms and bathrooms (perfect for large groups). Each option features unique themes and décor designed to transport visitors back to the days of the Old West.

An added convenience is an on-site General Store, open seven days a week that carries a variety of products and deli. And if guests require outdoor gear, Red Rocks Outfitters offers footwear, backpacks, trekking poles, cooking equipment, lighting and other outdoor products.

Flying into Lajitas

Lajitas International Airport is a privately-owned airport for use specifically by the resort's guests. The airport has Jet A, 100LL, a GPU, an FBO building with flight planning options, tie-downs, hangars as well as transportation to the resort.

"Lajitas is arguably one of the most remote regions in the United States," said Olson. "With Midland, Texas being the closest large city at a four-hour drive away, the resort is ideal for private aviation."

Chris Baur, an operator of a PA46T Piper Meridian and a Robinson R66 helicopter, is a frequent visitor to Lajitas. Upon raving about the resort, Baur provided an overview of the flight procedures:

"Pilots can file IFR to 89TE. You will receive a cruise clearance from ZAB (Albuquerque Center) and a phone number (505-856-4500) to call and cancel your flight plan after landing at Lajitas. Cell service and internet are excellent at the resort, but there is no radio or radar service in this remote region of the United States. Pilots must also face high terrain in all quadrants around the airport." In addition, Chris noted that Hughes Aerospace Corporation is in the process of implementing a COPTER LPV Instrument Approach and Departure at Lajitas, as well as instrument approaches and departures to the new runway. This, along with the new AWOS-A, will provide day and night all-weather access to Lajitas International Airport including access for emergency medical helicopters.

The approaches are not the only tentative update to the airport, as the new 6,500-foot by 100-foot concrete runway (7/25) has a projected opening date of May 1, 2019. It will run parallel to the old 6,000-foot by 100-foot asphalt runway (to be used as a taxiway upon completion of the new runway).

Further information about the airport, such as landing reservations, can be found on the Lajitas Golf Resort website (*www.lajitasgolfresort.com*). Also on the site are numerous videos showcasing the features and beauty of Lajitas – something that can truly be appreciated in person.

Stay tuned for our next "Great Getaways" feature in the May issue.

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



Behind the Phones of an MRO Facility

by Rebecca Groom Jacobs





Airplanes are expensive. Most of us do all we can to reduce that expense, but despite our best wishes – and often in the face of meticulous preventative care – eventually something is going to malfunction. When it does, we turn to the experts at Maintenance, Repair and Overhaul (MRO) facilities.

Enter a company like Duncan Aviation. Even if you are not a customer of theirs, there is a good chance the majority of you reading are familiar with the name.

After more than 60 years in the business, Duncan Aviation is the largest privately owned MRO facility in the world. The company provides nose-to-tail support for Bombardier, Dassault, Textron, Gulfstream and Embraer aircraft.

Component Repair

Repair is an integral portion of Duncan Aviation's business model. With three major MRO facilities in Battle Creek, Michigan, Lincoln, Nebraska, and Provo, Utah, and multiple satellite shops around the country, Duncan Aviation repairs approximately 25,200 components and accessories each year.

When a customer calls regarding a potential repair, one of Duncan Aviation's 10 customer account representatives (CARs) provides technical and troubleshooting support. The team works alongside shop technicians and sales reps to handle virtually any aircraft system problem including batteries, electronics, avionics and landing gears.

With the phone lines open 24/7/365, this group of CARs administers around 600 calls and inquiries every week. The team members often face pressure from operators with grounded aircraft and time-critical situations.

This led us to wonder: What exactly takes place on their end – behind the phone? We visited with Andrew Theis, a 15-year Duncan Aviation customer sales and service representative, to find out.

Duncan Aviation Repair by the Numbers (Weekly)

- 500 units received for repairs
- 500 completed units shipped
- 100 units shipped internationally
- ▶ 620 inbound calls
- 150 AOG calls received by CARs

A Day in the Life

Each morning, Andrew Theis arrives at his office by 7 a.m. and promptly opens his computer to respond to any pressing emails or phone calls from international customers. Whether it's sending pricing to a customer in Australia or arranging the shipment of a loaner unit to a grounded aircraft in Europe, he must prioritize these items as the workday in those distant countries nears completion. While he addresses international cases, his phone and computer start to come alive with the day's newest inquiries. Andrew responds to each while also beginning to check the status of his ongoing repair orders.

A repair order, or work order, is tied to every component in the shop. With a quick search in Duncan Aviation's proprietary computer system, Andrew can view each customer's work order which includes information such as repair status, unit history, aircraft model, owner, etc. When a customer calls regarding accessory or component repair, it is the job of a customer account representative (like Andrew) to affirm the issue, discuss all options and develop a repair order unique to the customer's needs and timeline.

Once a solution and deadline is agreed upon between the CAR and customer, an elaborate sequence of events is initiated: shipment of the component or accessory to Duncan Aviation; thorough inspection (and testing) by a specialist; development (and approval) of a repair estimate; shipment of an in-house loaner unit to customer (if applicable); repair of the component; shipment back to the customer; final payment. The customer account representative closely monitors and manages every step of the process.

"My job is unique in that I bridge the gap between the customer and the shop," said Theis. "When I am in the shop, I am an advocate for the customer. When I am speaking to the customer, I am an advocate for the shop. So, it is so important for me to understand and communicate effectively why and how a repair is taking place."

At any given time, Andrew can be managing around 280 work orders. Depending on the situation, the shop prioritizes the work to meet the guidelines set by Andrew and the other CARs. The typical target is to have the component repaired and back in the hands of the customer within 10 working days. But there are situations where this can be cut down to less than 24 hours.

"Our default response is to do everything in our power to make the customer's deadline," said Theis. "And while some cases can be classified as urgent, the 'why' is less important. It's nice to know, but in every situation, their target is our target."

A Touchdown

Football is a big deal in Lincoln, Nebraska. For every home game, there are



At any given time, Andrew Theis (left) can be managing 200-plus repair orders.

thousands of Cornhusker students, alumni and fans that descend upon the University of Nebraska's Memorial Stadium. This includes dozens of aircraft arriving at Duncan Aviation's home airport of LNK.

Late one Friday evening, prior to a major home game, a local medevac operator put in an urgent call to Duncan Aviation regarding what appeared to be a malfunctioning ELT. The operator was unable to troubleshoot the issue and as a result, the aircraft was grounded in California until the unit could be repaired or replaced.

Andrew responded to the call and relayed details of the issue to the appropriate technicians in the shop. They confirmed the ELT was the likely culprit. Andrew then arranged for expedited shipping of the faulty unit from California to Lincoln. By midnight, the ELT was dropped at their front desk.

At 7 a.m. the next morning, game day traffic was already in full swing. A Duncan Aviation technician (one who was not originally scheduled to go into work) worked his way through traffic to retrieve the unit for inspection. Back at the shop, he was able to quickly diagnose the issue and produce a cost estimate, which the customer promptly approved over the phone.

Once the job and paperwork were complete, the next step was getting the unit back on an airplane to California. While the unusually high airport activity presented some logistical obstacles, Andrew was able to coordinate with the courier and make it happen: the repaired unit was back in the hands of the customer by 6 p.m.

In less than 24 hours, the broken unit was shipped across the country, fixed and reinstalled on the airplane, allowing the medevac to be back in the air at a moment's notice.

Closing Thoughts

While not all of us need a "24-hour turnaround" service, it's nice to know that there are MRO facilities and people like Andrew that can make that happen. In the highly competitive MRO market, customer care, clear communication and timely turnarounds are expected – and that's lucky for us when we run into the unexpected.



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371	CHALLENGER 300
55	CHALLENGER 600
38	CHALLENGER 601-1A
109	CHALLENGER 601-3A
51	CHALLENGER 601-3R
289	CHALLENGER 604
9	CHALLENGER 800
166	CITATION 500
285	CITATION 525
266	CITATION BRAVO
153	CITATION CJ1
85	CITATION CJ1+
194	CITATION CJ2
163	CITATION CJ2+
357	CITATION CJ3
92	CITATION CJ3+
240	CITATION CJ4
152	CITATION ENCORE
50	CITATION ENCORE+
297	CITATION EXCEL
18	CITATION I
242	CITATION I/SP
451	CITATION II
58	CITATION II/SP
161	CITATION III
64	CITATION LATITUDE
171	CITATION M2
381	CITATION MUSTANG
125	CITATION S/II
256	CITATION SOVEREIGN
68	CITATION SOVEREIGN-
241	CITATION ULTRA

236 C 28 C	
28 C	
	JITATION VI
97 C	CITATION VII
255 C	CITATION X
25 C	CITATION X+
212 C	CITATION XLS
209 0	CITATION XLS+
1 [DIAMOND I
42 E	DIAMOND IA
3 E	ORNIER ENVOY 3
232 E	CLIPSE EA500
52 E	MBRAER LEGACY 500
135 E	MBRAER LEGACY 600
58 E	MBRAER LEGACY 650
232 E	MBRAER PHENOM 100
261 E	MBRAER PHENOM 300
75 F	ALCON 10
21 F	ALCON 100
19 F	ALCON 200
186 F	ALCON 2000
21 F	ALCON 2000EX
58 F	ALCON 20C
15 F	ALCON 20C-5
23 F	ALCON 20D
2 F	ALCON 20D-5
31 F	ALCON 20E
9 F	ALCON 20E-5
68 F	ALCON 20F
64 F	ALCON 20F-5
194 F	ALCON 50
8 F	ALCON 50-40
91 F	ALCON 50EX
153 F	ALCON 900
23 F	ALCON 900C
102 F	ALCON 900EX
180 0	GLOBAL 5000
127 0	GLOBAL EXPRESS
19 0	GULFSTREAM G-100
206 0	GULFSTREAM G-200
8 0	GULFSTREAM G-300
22 0	GULFSTREAM G-400
283 0	GULFSTREAM G-450
7 0	GULFSTREAM G-500
471 0	GULFSTREAM G-550

62	CLILESTREAM C II
22	GULESTREAM G-IIB
128	GULESTREAM G-III
170	GULESTREAM G-IV
283	GUILESTREAM G-IVSP
170	GULESTREAM G-V
34	
5	HAWKER 125-14
7	HAWKER 125-1AS
	HAWKER 125-3A/BA
11	HAWKER 125-400A
13	HAWKER 125-400AS
12	HAWKEB 125-400B
11	HAWKER 125-600A
3	HAWKER 125-600AS
103	HAWKER 125-700A
59	HAWKER 4000
187	HAWKER 400XP
34	HAWKER 750
180	HAWKER 800A
33	HAWKER 800B
353	HAWKER 800XP
40	HAWKER 800XPI
81	HAWKER 850XP
155	HAWKER 900XP
6	JET COMMANDER 1121
4	JET COMMANDER 1121B
1	JETSTAR 6
5	JETSTAR 731
12	JETSTAR II
8	LEARJET 23
17	LEARJET 24
1	LEARJET 24A
11	LEARJET 24B
34	LEARJET 24D
10	LEARJET 24E
7	LEARJET 24F
11	LEARJET 25
36	LEARJET 25B
9	LEARJET 25C
92	LEARJET 25D
3	LEARJET 28
28	LEARJET 31

167 LEARJET 31A

33	LEARJET 35
352	LEARJET 35A
13	LEARJET 36
32	LEARJET 36A
30	LEARJET 40
192	LEARJET 45
166	LEARJET 45XR
100	LEARJET 55
4	LEARJET 55B
12	LEARJET 55C
256	LEARJET 60
467	PILATUS PC-12/45
110	PREMIER I
6	SABRELINER 40
17	SABRELINER 40A
3	SABRELINER 40EL
1	SABRELINER 40R
21	SABRELINER 60
18	SABRELINER 60ELXM
2	SABRELINER 60EX
62	SABRELINER 65
13	SABRELINER 80
6	SABRELINER 80SC
71	WESTWIND 1
5	WESTWIND 1123
29	WESTWIND 1124
62	WESTWIND 2

Turboprops - 11,093

Chief Pilots & Owners

Count	Aircraft
2	PIPER MALIBU
362	CARAVAN 208
1206	CARAVAN 208B
2	CARAVAN II
33	CHEYENNE 400
137	CHEYENNE I
13	CHEYENNE IA
262	CHEYENNE II
57	CHEYENNE III
38	CHEYENNE IIIA
51	CHEYENNE IIXL
22	CHEYENNE IV

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179 CONQUEST I



19		
26	MERLIN IIIA	
47	MERLIN IIIB	
19	MERLIN IIIC	
4	MERLIN IV	
9	MERLIN IV-A	
8	MERLIN IV-C	
63	MITSUBISHI MARQUISE	
1	MITSUBISHI MU-2D	
23	MITSUBISHI MU-2F	
18	MITSUBISHI MU-2J	
33	MITSUBISHI MU-2K	
11	MITSUBISHI MU-2L	
18	MITSUBISHI MU-2M	
17	MITSUBISHI MU-2N	
24	MITSUBISHI MU-2P	
36	MITSUBISHI SOLITAIRE	
67	PILATUS PC-12 NG	
49	PILATUS PC-12/47	
28	PIPER JETPROP	
46	PIPER M500	
59	PIPER M600	
81	PIPER MERIDIAN	
3	ROCKWELL 680T TURBO	
5	ROCKWELL 680V TURBO II	
5	ROCKWELL680WTURBOII	
4	ROCKWELL 681 HAWK	
98	SOCATA TBM-700A	
68	SOCATA TBM-700B	
92	SOCATA TBM-850	
02	SOCATA TBM-900	
5	STARSHIP 2000A	
70	TURBOCOMMANDER 1000	
38	TURBO COMMANDER 690	
40	TURBOCOMMANDER 690A	
39	TURBOCOMMANDER690B	
79	TURBO COMMANDER 840	
24	TURBO COMMANDER 900	
56	TURBO COMMANDER 980	

25 MERLIN IIB

win	Piston -	6.507

Owners Count Aircraft

37	BARON 56 TO

- 1433 BARON 58 2 BARON 58 PA
- 345 BARON 58P
- 108 BARON 58TC
- 3 BARON A56TC
- 321 BARON G58
- 188 BEECH DUKE B60
- 162 CESSNA 340
- 520 CESSNA 340A
- 70 CESSNA 402B BUSINESS LINER
- 133 CESSNA 402C
- 24 CESSNA 404 TITAN
- 247 CESSNA 414 357 CESSNA 414A
- CHANCELLOR
- 43 CESSNA 42138 CESSNA 421A335 CESSNA 421B
- 607 CESSNA 4216
- 53 CESSNA T303
- 106 PIPER 601P AEROSTAR
- 24 PIPER 602P AEROSTAR
- 442 PIPER CHIEFTAIN
- 314 PIPER MERIDIAN
- 25 PIPER MOJAVE
- 315 PIPER NAVAJO
- 13 ROCKWELL 500 SHRIKE
- 24 ROCKWELL 500A SHRIKE
- 77 ROCKWELL 500B SHRIKE
- 44 ROCKWELL 500S SHRIKE 5 ROCKWELL 500U SHRIKE
- 12 ROCKWELL 520 COMMANDER
- 5 ROCKWELL 560
- 5 RUCKWELL 560

- COMMANDER 11 ROCKWELL 560A COMMANDER
- 7 ROCKWELL 560E
- 7 ROCKWELL 560F
- 13 ROCKWELL 680 SUPER
- 3 ROCKWELL 680E
- 14 ROCKWELL 680F
- COMMANDER 14 ROCKWELL 680FL
- GRAND COMMANDER 6 ROCKWELL 680FLP
- GRAND LINER

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Owners

Count	Aircraft
225	BEECH BONANZA
429	CESSNA 182
54	CESSNA 206
393	CESSNA P210N
21	CESSNA P210R
52	CESSNA T182
1	CESSNA T206
782	CIRRUS SR20
2920	CIRRUS SR22
238	PIPER MALIBU
104	PIPER MATRIX
449	PIPER MIRAGE



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Our First Look at the G2 Vision Jet

by Rich Pickett

When you are the only company to offer a singleengine jet in the general aviation industry, what do you do for an encore? You make it go higher, fly farther, be quieter and instill the latest and greatest technology. Cirrus Aircraft achieved each of these in the release of its second-generation Vision Jet known as the "G2." The latest model comes two years after the first Vision Jet deliveries began in December 2016. With 100 jets now delivered, Cirrus is poised to produce more than 250 in its first five years of production. As a follow-up to Dianne White's review of the first-generation Vision Jet ("The Cirrus Vision Jet," Twin & Turbine, February 2018), we arranged a visit to Knoxville to experience the upgrades specific to the G2. Leading up to the trip, I corresponded with Matt Bergwall, director of the Vision Jet product line. We mapped out two days chockfull of the Cirrus experience including a facility tour, training sessions, in-depth discussions and, of course, an extensive flight.

Preflight

Matt and I met in Knoxville at the McGhee Tyson Airport (KTYS), which is where Cirrus recently relocated and expanded their customer-facing facilities with an aircraft delivery center, service center and Vision Jet training center (a sensible location as it is within a two flight-hour range of over 1,000 SR aircraft owners). To start things off, we spent two hours giving the Vision Jet a thorough pre-flight as well as discussing the core differences between the G1 and G2 versions. The Vision Jet exhibits a tall presence and large cabin for its weight class, with a cabin width of 61 inches at its widest section, then tapering to 44 inches aft. But despite its size, the jet was designed to fit in hangars that typically fit the Cirrus SR series – an intentional decision since existing Cirrus owners constitute the majority of the Vision Jet position holders and owners.

Overall, the differences during the exterior portion of the preflight are minimal. Cirrus removed the small vortex generators (Boundary Layer Enhancers) and aileron fence from the wing and lengthened the T-strip on the aft edge of the aileron. If conducting a preflight at night, underwing LED lighting adds a nice ambiance. The extended baggage area is now standard with the G2 providing a total of 27.4 cubic feet of storage with a capacity of 300 pounds. The engine preflight is simple with ease of access to the engine oil level sight glass. The pilot steps up on the left wing to remove or install the engine inlet cover.



The cabin door opens to a wide 2 feet by 4 feet opening with lighted steps. Cirrus has made it easy to move the seats with seat adjustment levers both fore and aft. Any cabin seat can be easily moved or removed without an A&P signing off the change. Simply note the presence or absence for each one when doing weight and balance calculations. With all seats installed, our airplane had a full fuel (296 gallons/2,001 pounds) payload of 394 pounds. Remove the aft child seats and that number increases to 431 pounds.

With the rear seats included, the jet offers a total capacity of five adults and two children. Though the two 90-pound rated child seats are an option, they are almost always selected by buyers. It is obvious Cirrus kept families in mind with their inclusion of latch support for child seats. The seats also now come with bottom cushion storage areas and kangaroo pouches capable of storing small items such as phones.

The G2 has a center console option with tables that fits between the middle row seats. In each seating position, both crew and passengers have convenient storage nooks with intercom, music and USB power ports. The cabin features an optional overhead 22-inch Inflight Entertainment (IFE) display with an HDMI video port on the cabin sidewall. This option could be great for a moving map or entertainment for the passengers.

Up front, the G2 incorporates Mid Continent Instruments and Avionics' True Blue lithium-ion emergency and main batteries, which offer less weight, integrated heaters and extended service intervals. The heaters virtually eliminate low temperature start limitations. During the cockpit preflight, the operation of the master switches initiates a four-minute activation of the battery heaters, lowering the low temperature battery-only start limitation from 0C to - 40C. Having frequently dealt with cold weather starts with jets in the mountains, I especially appreciate this feature. Between the new batteries and other improvements, the useful load has increased by 50 pounds compared to the G1 Vision Jet (and this is despite adding structures to increase the pressurization differential to 7.1 PSI).

Perhaps one of the most noticeable changes in the cockpit is the incorporation of autothrottle switches on the thrust level console (more on that later). Cirrus also removed the emergency battery switch from the overhead console in the G2 due to updates of the electrical systems.

When the Garmin G3000 avionics powers up, you immediately notice the improved screen resolution – high-quality enough to display sectional, enroute and procedure charts in amazing clarity. The pan and zoom capabilities are also beneficiaries of the new higher speed processors. Cirrus has aptly named the new system "Cirrus Perspective Touch+ by Garmin." All of the checklists are easily accessible through a control wheel on the switch panel. Acknowledgment of tasks is accomplished by pressing the control wheel.

Starting the Vision Jet

To start the G2, you simply turn the start knob to run and push the button. While the Williams FJ33-5A has a robust FADEC that protects against hot starts, the pilot still monitors the start process for abnormal conditions. The lithium-ion batteries spin up the engine quickly with a fast charging recovery.

With just a quick check of the systems, we taxied out to the runway. I found the castering nose wheel made steering easy, and the Beringer brakes were smooth.



The Flight

Our flight plan was to fly from Knoxville (KTYS) to New Orleans Lakefront (KNEW) for lunch, then fly to Tuscaloosa (KTCL) for approaches before heading back to KTYS. The first flight was just under 500 nm, and it was expected we would consume 120 gallons of fuel with



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a flight time of 1:42 (no wind). By adding 50 gallons for a reserve, this would allow a payload of 1,213 pounds with a Zero Fuel Weight of 4,900 pounds. A two-hour flight would accommodate a 1,010 pound payload.

Once we were cleared for departure, I triggered the TOGA button and set the thrust lever to takeoff position. After a takeoff roll of less than 2,000 feet, I rotated at a V_r of 90 KIAS with an initial climb rate of more than 3,000 fpm. The Vision Jet has two yaw stability systems, Stability Augmentation System



stick is familiar to SR pilots, however, as expected, it has a higher control force.

The view from the cockpit is outstanding. The slight nose down attitude offers pilots an expansive view. And the laminated windshield design by Lee Aerospace is constructed with a thin gold film between the layers, which reflects 92 percent of UV radiation and 63 percent of solar energy. The impact of this design dramatically improves cockpit comfort.

The Cabin

Leaving Matt in charge, I explored the aft cabin. I found the seats to be comfortable with high-quality craftsmanship evident throughout the cabin. The oversized windows offer an equally impressive panoramic view for passengers. The cabin of the G2 is 3 to 4 dB quieter than the G1. My decibel measurements indicated a noise level around 88 dB, which is 4 to 6 dB less than a Piper Meridian, and up to 10 dB quieter than a TBM 850 at the same altitude. Other jets such as the Eclipse, Citation Mustang and Citation Jet series come in at around 80 dB while the



(SAS) and the yaw damper. The SAS is active until the yaw damper automatically engages at 400 AGL.

Positive rate of climb, gear up, 115 KIAS, and it was time to retract the flaps. Since this is the first Cirrus with retractable gear, they smartly placed the handle far away from the flaps. I hand flew the jet as we approached our cruise altitude of FL280, with it still climbing close to 1,000 fpm. The Vision Jet is more pitch sensitive than some jets with good feedback. The placement of the side control

Canadair CRJ regional jet is 85 to 94 dB (depending on seat location). During our flight, I used the Bose ProFlight headset which worked well. G2 passengers would also likely want to use headsets.

Back in the Cockpit

Leveling off at FL280, it was time to check our performance numbers (we opted for FL280 for a higher airspeed on this leg).

Our airspeed showed 314 KTAS/0.528M burning 70 GPH (493 PPH at -41oC). In

comparison, a TBM 930 would fly at 315 KTAS and burn 61 GPH. If we flew the G2 at the new FL310 service ceiling, it would provide five percent more range with a slightly lower true airspeed of 309 knots and a fuel burn of 64 GPH.

In the Vision Jet, Cirrus opted for horizontal controllers for the G3000 which makes sense for its design. Modern avionics are extremely reliable, but failures can still occur. I progressively turned off displays and observed the reversionary modes which are automatic. The remaining display reverts to a composite view and Cirrus utilizes one of the controllers for reversionary display of an integrated ADI and HSI.

Visual Approach

The visual descent into New Orleans Lakefront (KNEW) was easy, especially with the impressive forward visibility. Despite our high-speed descent, the maximum for the airspace, the jet slowed down easily to approach flap extension speed of 190 KIAS. My rule of thumb in all aircraft is to be at flap speed no later than 10 nm from the FAF.

With the initial flaps extended, it was time to lower the gear which slowed us down to the landing flaps speed of 150 KIAS. The winds were a direct crosswind to Runway 36L, gusting to 25 knots – a perfect test for my first landing in the Vision Jet. Despite turbulence, slight wind shear and strong crosswinds, the jet was easy to land, even above its demonstrated crosswind capability of 16 knots with 100 percent flaps.

After lunch at the airport restaurant, we departed the ramp of Flightline First and headed to Tuscaloosa (KTCL). On this leg, I wanted to evaluate the Vision Jet's new autothrottle system from departure through an approach (and missed approach) at KTCL.

You have to experience the autothrottle to appreciate how well this feature is integrated into the aircraft. Rotating at a V_r of 90 KIAS, the jet quickly climbed to the 400 AGL altitude for engagement of the autopilot and autothrottle. The autothrottle has two modes: manual and FMS. FMS is the more intelligent mode and will adjust speed for airspace restrictions as well as sophisticated control for holding patterns and approaches. I selected FMS and let it fly our entire profile.

G2 Vision Jet

Performance @ FL310	309KTAS/64 GP
Max Ramp Weight	6040 lbs
Max TO Weight	6000 lbs
ZFW	4900 lbs
Max Landing Weight	5550 lbs
BEW - as flown - 7 Seats/TKS	3678 lbs
Useful Load	2362 lbs
Usable Fuel Capacity	2001 lbs
Full Fuel Payload	394 lbs
Max Range @300KTAS	1100 nm
500 nm trip/IFR Reserve - Payload	1134 lbs
500 nm Trip - Fuel Used	152 gallons
Base Price	\$2.38M
As Flown	\$2.75M

Upon reaching KTCL, ATC gave us hold at Brookwood (OKW) for the RNAV RWY 22 approach. Entering the hold and approach was easy with the G3000.

Once entered, the autothrottle adjusted and when we were within three minutes of our hold, slowed the Vision Jet to holding speed. When cleared for the approach, all I needed to do was activate the approach and the autothrottle did the rest. After gear and approach flap extension, the jet slowed down to landing flap speed then V_{ref} . At the Decision Altitude, I pushed the TOGA button and the autothrottle and the autopilot did the rest – setting takeoff thrust and progressing on the missed approach procedure. It could not be simpler.

Airwork

For 45-degree steep turns, I adjusted the power to 24 percent thrust (N1 70%) which gave me an IAS of 155 knots. With Garmin's implementation of Electronic Stability Protection (ESP), when you exceed 45 degrees of bank, the autopilot provides a gentle nudge to reduce the bank.



The stall series was a non-event. The jet incorporates an effective stick shaker and pusher, and I was able to recover from a stall in less than 100 feet. Throughout all maneuvers, the jet was easy to handle and not significantly different than other turbines I fly.

Training

To gain a better perspective of the company's training philosophy and programs, I spent some time reviewing their extensive ground training, including time in the simulator with Cirrus Training Center instructor and TCE, Joe Peterson. Cirrus is dedicated to training pilots to the highest standards in the industry, with over 200 type ratings issued so far.

The simulators offer a realistic deployment of the Cirrus Airframe Parachute System (CAPS). I had so much fun testing the capability that I actually practiced it four times at various airspeeds. If flying above the 145 KIAS deployment speed, the autopilot pitches the nose up and slows the jet to the target speed.

Following a type rating, Cirrus also offers pilots a comprehensive mentor pilot program to enhance continued training.

Ownership Programs

In addition to a standard two-year warranty, Cirrus offers the optional Jetstream Plus and Concierge programs with varying terms of coverage. Both include the Williams International Tap Blue engine program, scheduled maintenance and recurrent training. "Plus" owners basically have tip-to-tail coverage, receiving all unscheduled maintenance, normal wear items, database subscriptions, AOG support, weather data (Sirius and Iridium) and enhanced training. Owners can expect to pay \$343-\$410 per hour depending on the selected program and time period.

How the Jet Compares

Seeing as there are no other singleengine jets in production for direct performance comparison, comparable aircraft (currently in production) based upon weight or speed are the Piper M600 and the TBM 930 turboprops. In general, when comparing aircraft, many factors come into play – operators need to evaluate based upon their specific missions.

On a mission basis alone, the Vision Jet G2 can fly up to 1,200 nm with a 395 pound payload. Or in the case of our 460 nm flight from TYS to NEW – 1,213 pounds. The closest current production competitor, by weight and price, is the Piper M600.

Based on my calculations, on our 460 nm mission, the M600 would burn 30 gallons less fuel, take 12 minutes longer and carry 1,010 pounds. If you extended your budget significantly to include the TBM 930, you would arrive five minutes earlier, burn 100 gallons of Jet-A and carry approximately 190 additional pounds.

But while Cirrus could have very well designed a turboprop, they smartly chose to meet the market's demand for a singleengine jet – and their sales clearly show it was a good move. They are in a class of their own and judging by their record, we can expect Cirrus to continue evolving their latest aircraft.

After 11,000 hours of piloting over 90 aircraft models, **Rich Pickett** still has a passion for flying. Rich holds an ATP, CFII SME, SES, glider licenses, and type ratings in the L29, L39, Citation 500/510s/525s, Eclipse 500S and DA10. His company, Personal Wings, provides training, mentoring and aircraft services. You can contact Rich at **rich@person**alwings.com.



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Five on the Fly

by Rebecca Groom Jacobs





wно: Todd Simmons

POSITION:

President of Customer Experience, Cirrus Aircraft

HOME BASE: Knoxville, TN (KTYS)

RATINGS:

Private, Instrument, Vision Jet SF50 Type Rating, Glider Rating

FLIGHT HOURS: 2,300

1. Can you describe your current role at Cirrus Aircraft and what "customer experience" entails?

Customer experience describes all of the touch points for our customers – or as I like to say, every outwardly facing aspect of Cirrus Aircraft. I have responsibility globally for the brand, which includes sales, marketing, flight training and operations, customer service and support, design and personalization. I probably spend the majority of my time on the ownership aspect collectively. Sales is important, of course, but I spend a lot of time thinking about the experience a customer will have while owning the airplane.

If you look at the segments "above us" with the larger cabin business jets, many of those airplanes are flown by professional flight crews. So, a lot of the ownership aspects I am speaking to are managed by flight departments. But in our world, our customers are typically the ones in the front left-hand seat. I look to focus on, refine and be creative in the ownership programs and initiatives we offer, all of which are intended to make the benefits of personal aviation as accessible and easy as possible.

2. What is your current view on the activity and strength of the GA market? What key factors need to remain constant to ensure GA will thrive into the next decade?

At Cirrus Aircraft, the trajectory is certainly upward. We just completed the best year we've had in a decade, with 380 SRs and 63 jets delivered in 2018. Our performance has strengthened every year since the tough times in 2008 and 2009. What we find our customers are looking for is innovation, improved utility and more value in an airplane. Our commitment to meeting those expectations and improving value is what is driving our business. We are never satisfied with sitting still or settling.

It's also important we don't lose sight of some of the difficult areas facing aviation such as user fees, privatization, fuel alternatives, etc. It seems there is no shortage of challenges, so we got to keep making sure those challenges do not restrict access to aviation. In my view, expanding access and accessibility to personal aviation is the bottom line.

3. Last year, the company opened the Vision Center in Knoxville, TN. Can you discuss how customers were the driving force behind the construction of this facility?

As the Vision Jet came along, we recognized some challenges with our current facilities and customer operations in Duluth and Grand Forks. The jet forced us to think differently because when a type rating is required, you can run into more

challenges with weather, fuel and maintenance. That drove us to pursue a new location, closer to customers, that is more weather-friendly. We did a thorough search looking at 30 locations in 15 states before we selected Knoxville – and we could not have made a better choice. Both from the geographic location and the amenities offered here in East Tennessee.

The key components we have here are aircraft delivery, flight training (SR or SF), part 142 authorization and a level D full-motion simulator (the flagship of the facility). And of course, we offer all aspects of service and maintenance here as well.

We feel that we have built a customer experience that has not been defined inside of aviation but by the bar that has been set by those outside of the industry like luxury automobiles, high-end resorts, cruise ships; places like these have raised the bar in terms of customer experience. That's why we built the Vision Center. Our singular focus here is on customers, and it's worked extremely well. Our customers love it.

4. In your position, you help set the tone for a buyer's entire ownership experience. How would you define your leadership philosophy?

First and foremost is collaboration. Collaboration with our customers – thinking together about how to improve that ownership experience. Collaboration with the marketplace – how can we make a more significant impact on GA as we know it. Collaboration with our partners and suppliers – how we can grow together. Collaboration with our partners right here in Tennessee – what are all the ways we can enhance our facilities and amenities on a localized level.

Secondly, I am a pretty energetic person. I always have a sense of urgency. I like to say that when you are in the business of defying the laws of gravity, you can never let up because it never lets up. It takes energy, a sense of urgency and a commitment every day to making our business better and looking outside the industry for the benchmarks that our customers want and expect.

The third and final thing I'll mention is creativity. If you are not careful, a lot of things like regulatory effects and the airport environment can be a detriment to creatively thinking about how we move this industry forward, and how we move our products and experience at Cirrus Aircraft forward. So, we spend a lot of time looking at signals or trends outside of aviation and think about how they can be a part of aviation. Creativity is something I like to think I keep in my pocket every day.

5. Since the first Vision Jet deliveries began in 2016, what have you learned about your customers, products and industry?

There are a couple of very distinct things. The first one is our customer's expectations are even higher. What I mean by that is personal aviation has a legacy going back decades, where the owner-operator is responsible for all components of ownership, management, maintenance, etc. Our customers want all of those moving parts to be easy. Especially with the Vision Jet, they're bringing a turbine-level expectation of dispatch reliability and operating reliability that we have to live up to every day. And a number of our customers have had experiences with airplanes from a price point and size well above a Cirrus,

yet bring those same ownership expectations to us – as they should. We are having to up our game even further.

The other trend we see – which has been underway for quite some time – is our customers and operators want a complete suite of ownership options. Bundling items like aircraft management, prepaid maintenance



and prepaid flight training accomplishes a few things: complete ownership programs, consistency and predictable costs. We recognize that we don't want to manage the airplane piecemeal but instead bring all of those aspects together. We were already seeing this in the piston line, but are bringing an even more sophisticated approach to the Vision Jet.



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A Pilot's Guide to a Successful Aircraft Partnership

by Jordan Sok



Whether it's cars, clothes or workspace, consumers are finding new ways to lower costs every day in today's sharing economy. While collaborating resources can certainly lower the bills, not everything may be worth sharing – but what about your aircraft?

Over time, owner-operators have experimented with a variety of sharing options, from traditional partnerships to fractional or membership models. Today's pilot can go many routes in the sharing world to find the best fit for their needs.

When done correctly, the numbers show partnerships are a smart path in terms of net-cost and aircraft access. Very few assets have the high-dollar, low-usage combination of an airplane, so it makes sense to split the cost with someone else that also has low-utilization needs. The trick is finding that partner and doing it the right way.

So, what are the secrets to a successful partnership? We spoke to three recognized industry experts to get their opinions:

- Mark Molloy, President of Partners in Aviation – offers professional matching and legal structuring for aircraft co-owners.
- Daniel Cheung, Member of Aviation Tax Consultants – provides

customized ownership entity and tax consultation.

• Mark Rogers, President of Lone Mountain Aircraft – offers aircraft sales, acquisition and management services.

Here are five areas to consider before you partner:

1. Make Sure a Partnership is Best for You.

While a partnership offers major financial advantages for the right candidate, it may not be the best fit for everyone. For some, sharing isn't worth it even if it can save money. For others, a partnership may not be the best solution in regards to access needs.

For example, someone flying 50 hours or less per year will likely find a charter, fractional/jet-card or membership programs to be the most sensible cost-per-hour option. On the other hand, those flying much more than 150 hours per year may find soleownership provides the best balance of net-cost and access. According to Molloy, it's operators flying 150 hours per year or less that should explore a partnership.

"Access is the key. With two operators each flying 150 hours per year or less, both maintain access comparable to sole-ownership at half the cost. This is where co-ownership makes the most sense."

KEY TAKEAWAY: How much do you fly? If you fly 150 hours per year or less and can find an operator with similar usage requirements, the value proposition of a partnership is compelling.

2. Choose Your Partner(s) Wisely.

Choosing the right partner(s) is key to a successful aircraft partnership. The general aviation world is full of horror stories because friends decided to partner. While a partnership can certainly be successful with the right pre-defined terms (see #3 below), it can also end poorly due to scheduling conflicts, maintenance disagreements and risks. When looking for a partner, consider the following questions:

- 1. Am I better off partnering with a friend or colleague or someone with similar interests but no personal relationship to me?
- 2. Can we agree on pre-defined terms in regards to schedule, maintenance, management and exit options?
- 3. What about adding a third or fourth partner to reduce costs further?

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The consensus from those we spoke with was that choosing your "buddy from the club" as your aircraft partner is a risky proposition. You may be better served with someone who aligns with your key interests but is outside your social circle.

And while there is no one right answer regarding the number of partners versus complexity and costs, we learned that in most cases, less is more. Adding numbers to the pack will drive down your costs but exponentially increase the complexity of your partnership. The formula for successful partnerships is to keep it simple. The program offered by Partners In Aviation, "PIA Managed Co-Ownership," limits matches to two operators.

► **KEY TAKEAWAY:** Adhere to a checklist for partnership requirements and stick to it without compromising. Include location and willingness to concur on predefined terms important to you.



3. Agree on Pre-Defined Terms.

How is the aircraft going to be shared? What are the exit options? How will the aircraft be managed? Who is paying for what, and when? If these questions aren't clearly answered before the partnership begins, it's likely you're going to run into trouble.

When it comes to associated costs, there are three approaches in a partnership: his, mine or ours. Owners are either splitting the cost 50/50, splitting based on usage or splitting based on a combination of both. For example, partners could split annual fixed costs 50/50 but pay usage costs proportionate to the amount flown by each partner. This all should be predetermined before the partnership begins.

► **KEY TAKEAWAY:** Agree on predefined terms including the aircraft's schedule, maintenance operations, management, contract term, exit options and base airport.

4. Get Legal & Tax Counsel.

Before entering a partnership, it's important to talk to the necessary legal and tax experts to ensure you are protected. Your counsel can help determine the smartest entity for you in regards to your state and local laws, then draft the agreement for you.

"The most common partnership mistake I see is when one or both parties are looking to maximize income tax deductions, yet set up a single LLC together," said Cheung. "That makes it difficult to navigate from a tax perspective. Partners in this scenario should set up separate entities that are best suited for their situation."

According to Cheung, good counsel will not only have a knowledge of the IRS and local laws but also a thorough understanding of FAA regulations to ensure sure you are in full compliance.

KEY TAKEAWAY: Get aviation legal and tax counsel to determine the best entity for you to use, separate from your partner's entity.

5. Involve a Management Company.

Historically, most aircraft partnerships have forgone the use of a management company, opting to handle ongoing maintenance, scheduling and the carrying out of the agreement themselves. While the arrangement proves successful for some, it often time leads to the demise of the partnership for others.

Rogers has assisted in the acquisition of aircraft for both soleowners and partners for over a decade and now offers management to partnership clients.

"Traditional partnerships often break down due to poor communication involving the scheduling and usage of a shared aircraft," said Rogers. "We've found that the issue is easily resolved with the appropriate management arrangement. By putting management at the center of operations, communication doesn't flow between partners, but directly through us."

Hiring a management company helps ensure the agreement initially prepared between partners is carried out as intended and both parties are protected.

"It's really a negligible cost when you consider the cost-savings of the co-ownership and the protection it provides," said Rogers. "I would never advise entering a partnership without that safeguard."

► **KEY TAKEAWAY:** Find a management company that will add value to your ownership experience and has a history of managing partnerships.

Conclusion

When handled correctly, a partnership can cut costs in half, allowing major savings for both parties and the opportunity to step up in aircraft faster. But pilots today know it isn't as simple as a handshake agreement. A smart partnership takes time and energy to set up, but it can be a savvy investment.

Jordan Sok is founder of OneTeam Marketing Solutions, a full-service marketing agency and member of COPA. Jordan can be contacted at **Jordan@OneTeamMarketing.com** or through **OneTeamMarketing.com**.

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Jet Journal

ForeFlight Releases New 3D Features

by Rich Pickett



If you are already a fan of utilizing synthetic vision with ForeFlight Mobile, then you will really enjoy the latest feature released in version 11.0.1. With their top-of-the-line subscription, Performance Plus, Foreflight has included high-resolution 3D aerial views which combine visual imagery with Jeppesen terrain data. You can examine virtually any airport – from the ones you frequent to those you hope to visit in the future.

I recently used the feature on a flight in our Eclipse from my home airport in San Diego (KMYF) to Mammoth Lakes (KMMH). The imagery was phenomenal, offering me multiple views and perspectives that I could easily manipulate. Even though I've flown into Mammoth for 15 years, I used the feature to give me an enhanced view of the approach – useful since we had cloud cover between us and the airport. You simply select the runway and it positions the view on the final approach course.





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877-247-7767 www.AIR-PROS.com pilots protecting pilots When you combine the 3D aerial views with synthetic vision, the pilot has a comprehensive situational awareness of the terrain and airport environment. It certainly would have been a useful addition when I flew to Narsarsuaq, Greenland (BGBW), where the approach is along a fjord.

ForeFlight makes it easy to download the imagery to your iPad or iPhone. Simply select their "Pack" feature when you plan your flight.

In addition to the 3D imagery feature available in the Performance Plus subscription, ForeFlight offers some new features to all subscribers. I found their implementation of the FAA's new graphical AIRMETS, or G-AIRMETS, to be very useful. The G-AIRMETS are transmitted as part of the ADS-B data stream, so you would need a compatible ADS-B receiver to take advantage of this feature.



Other new features include enhanced flight log tracking with "Breadcrumbs," enhanced features in their Logbook and for those who want custom map layers, you can now import KMZ data files. For anyone flying to Europe, ForeFlight continues to add charts to support aviators flying in those regions.

It is exciting to see new features such as these from one of the leading aviation Electronic Flight Bag (EFB) software providers. I'm sure we will continue to see innovative enhancements from ForeFlight and other EFB providers in the coming years.

After 11,000 hours of piloting over 90 aircraft models, **Rich Pickett** still has a passion for flying. Rich holds an ATP, CFII SME, SES, glider licenses, and type ratings in the L29, L39, Citation 500/510s/525s, Eclipse 500S and DA10. His company, Personal Wings, provides training, mentoring and aircraft services. You can contact Rich at **rich@ personalwings.com**.





Small Mistakes

by Kevin Ware



Pilots are an odd group of people. They tend to be perfectionists who have an element of obsessive-compulsive behavior, and hate making mistakes, even very small ones. No matter how hard they try, most pilots rarely achieve a "perfect" flight where everything mechanically and performance-wise is flawless.

I suffer from this malady. So much so that even after a year goes by, I can often remember every little thing that went wrong on any given flight and mentally chastise myself, vowing never to let it happen again. From a purely psychological perspective, that may be a bit pathological, but if so, at least it is a constructive use of pathology because it makes for better pilots and safer flights.

Here are a few of the flights for which I am still chastising myself.

We are at FL410 over Klamath Falls, Oregon on a moonless night northwest bound under Oakland Center's watchful eye. The Lear is on autopilot with the altitude set and shown in magenta at the right upper corner of the pilot's PFD (primary flight display). I am the pilot flying (PF) sitting in the left seat messing around with my iPad to look up the TIMBR2 arrival we expect to get into Portland. My search is interrupted when the pilot monitoring (PM) in the right seat says, "You are gaining altitude." I look up, and sure enough, we are at 41,100 feet and slowly climbing.

My first thought is to see what happened with the autopilot and FMS control system, so I direct my attention to the set of tiny switches partially hidden in the dark under the glare shield. As I am focusing on those switches, the next thing I hear from the PM is, "We are still climbing...watch it, or we are going to get violated." The word "violated" finally wakes me from my autopilot reverie at which time I turn the thing off and manually take control of the airplane. That was the right move, although a bit late, as we are now 200 feet above assigned altitude and that is likely to catch the attention of the controller.

With jets in the high flight levels, the distance between a stall and cruise airspeed is quite small (the so-called "coffin corner") so pilots must be careful and gentle about control inputs when turning off the autopilot hand flying the airplane. I am aware of this fact and am now fully focused on the PFD, gradually reducing altitude hoping not to hear from the controller but confused as to what caused the altitude deviation.

So, I ask the PM, "Do you know what happened there, Mike?" To which he replies somewhat defensively, "No, but I didn't touch a thing." I then say, "Tell you what – I will hand fly the airplane and you re-set the autopilot on NAV and ALT and let's see what it does."

He does as instructed while I firmly hold the control wheel, only to find the airplane has completely forgotten about the whole episode and now flies precisely at the selected altitude with no problem at all.

Several quiet and anxious minutes pass as we listen for the unpleasant

inquiry from Oakland Center Controller about our altitude changes. But luckily our brief deviation must have occurred between radar sweeps because the frequency remains silent and we, now both fully alert, fly on into the night with the autopilot on and my left hand guarding the control wheel. Though the controller might not have noticed, and the PM is an understanding guy, I made more than one mistake in this scenario. My response to whatever caused the altitude change took too long. Plus, I should have spent less time looking at the FMS/AP switches, or maybe had the PM do that while I just flew the airplane by hand. I won't let that happen again.

A couple of months later, we are returning to our base airport at night in marginal IFR weather. We are set up for the RNAV/GPS approach on radar vectors to intercept the approach path and holding 4,100 feet as assigned by the controller. He says we are cleared for the approach, hold heading 030 and 4,100 feet until over SOCLO (the IAF) and established on the final approach course. With that, I push the APP (approach) button on the Lear's autopilot and am looking at the approach plate on my iPad when I hear the PM politely say, "I think we are supposed to be at 4,100 feet." I look up to see we are down to 3,900 feet which happens to be the appropriate altitude for that position on the approach, but not the one assigned by the controller. Not sure what caused this to happen (and remembering the prior altitude event), I quickly switch off the autopilot and climb back to 4,100 feet hoping the approach controller did not notice. But this was not the case this time. He shortly says, NXX, "Say altitude" to which the PM truthfully replies, "4,100 feet and uh, we just had a slight autopilot malfunction which we have corrected." The controller kindly replies, "Not a problem." My mistake, of course, is that I know autopilots can do unexpected things sometimes, particularly down low, and I should have caught the 200-foot altitude change earlier.

Fast forward to another night flight. I am making the same RNAV/GPS approach in marginal VFR conditions in the Lear. The airplane is coupled to



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the autopilot with everything going along just fine. A mile or so before we reach the missed approach point, the runway lights and VASI are clearly visible, and I click off the autopilot. I am about four knots fast and reduce power to slow down, but in doing so fail to trim pitch up slightly. As a result, the VASI lights which had previously shown a perfect two white and two red, now change to one white and three red. From my right, I hear the PM say, "Glide path... never want to see four red VASI lights at night." He is exactly right, and I promptly pitch up slightly to get back



to two reds and two whites. At night on an instrument approach, that descent below the correct glide path is something I should have caught and stopped earlier – another small mistake.

Sometimes, less than perfect performance also happens when I am not even flying the airplane.

We depart VFR in the Lear 35 out of Valdez, Alaska to the northwest and out over the water, planning on getting our IFR clearance in the air from Anchorage Center. In the clear air, the airplane is climbing at nearly 5,000 fpm. The PF is paying attention to lateral navigation in order to stay clear of the snow-covered mountainous terrain on either side of us. As we had briefed, my job as the PM is to run the after-takeoff checklist, contact the center controller, get the clearance, watch for traffic and monitor the airplane's altitude. I am working my way through this list of things when we zip right through 18,000 feet without the required IFR clearance.



When I catch it, I say, "Over 18,000 and still VFR" to which the PF mutters a four-letter word, promptly reduces power and pitches down. By the time I actually have Anchorage Center on the frequency and in radar contact, we are at 17,990 feet and perfectly legal. The controller says nothing and our passengers in the back do not complain about their slight sense of weightlessness. But both of the guys in the front seat remember. We made a mistake.

I also occasionally make mistakes on the ground.

I am pre-flighting a Robinson R44 helicopter. As I check the oil via the 4-inch by 6-inch hinged hatch on the left side, secured by two dzus fasteners, the wind cranks up and starts moving the main rotor blades in a fashion that catches my eye. I watch this for a minute or two wondering if I should get out the tie-down straps. But then the wind calms down and the motion stops. So, I continue my preflight around the helicopter and soon start the engine and fly away.

I land a half-hour later at the FBO for fuel, only to notice that the oil access door on the left side is still open. When the main rotor blade movement had diverted my attention, I forgot to secure the little door with the fasteners. No harm was done, but to an obsessive perfectionist like myself, mistakes like this are not supposed to happen.

In the large scheme of things, these were all just "small" mistakes. None resulted in any damage to the aircraft, discomfort to the passengers, filed FAR violations or for that matter, much comment from air traffic control or anyone else. I have been flying long enough to know that distractions can lead to errors. Even knowing that fact, it was distractions that led to most of the above problems.

This bothers me (and most other pilots) more than the circumstances or actual events would justify, but at the same time, the nearly obsessive and perfectionistic mindset is what makes us good pilots. I think the idea is if you are bothered even by your small mistakes, it is much less likely you will make a big one.

After more than 40 years and 11,000 hours, I have never had an accident, damaged an airplane, hurt a passenger or received a FAR violation. Somehow for pilots, a little compulsive and perfectionistic mental pathology can work in our favor.



Kevin Ware is an ATP who also holds CFI, MEII and helicopter ratings, has more than 10,000 hours and is typed in several different business jets. He

has been flying for a living on and off since he was 20, and currently works as a contract pilot for various corporations in the Seattle area. When not working as a pilot he is employed part time as an emergency and urgent care physician. He can be reached at **kevin.ware2@aol.com**.



From the Flight Deck

by Kevin R. Dingman



The Tempestuous Troposphere Turbulence Facts, Fiction and Fairy Tales



Many nursery rhymes express fear, suffering and disaster. Ring Around the Rosie was about the bubonic plague; Peter Peter Pumpkin Eater couldn't keep his wife, so he imprisoned her; a farmer's wife amputated the tails of three visually impaired mice and the parenting techniques of The Old Woman Who Lived in a Shoe would today warrant the intervention of Child Protective Services. Of course, we all know that when it's raining, it's pouring, and the old man is snoring, that we'll bump our head (on the cockpit ceiling, no doubt) and won't get up in the morning. King James and Mary of Modena's baby-napping scandal notwithstanding, we've also been taught that if it's windy and the bough breaks, the baby will fall - likely due to a royal microburst.

Perhaps for us valiant aviators, these were a childhood introduction to the potentially traumatic and unforgiving effects of weather. The list of atmospheric monsters has lengthened since we were kids and pilots can't outgrow or ignore them. No longer a fairy tale, turbulence demons live in the heart of our flying territory.

Our Non-Terrestrial Territory

Weather and turbulence are the result of uneven heating of the Earth by the sun. Combine this with pressure, temperature, moisture differences, planetary rotation with surface friction and you have the ingredients for a changing and sometimes turbulent atmosphere. The troposphere is the lowest layer of the atmosphere, 3.7 to 6.2 miles (19,500 ft. to 32,500 ft.), and it's where nearly all weather conditions take place. The top of the troposphere varies with latitude (it is lowest over the poles and highest at the equator) and by season (lower in winter and higher in summer). It can be as high as 12 miles or 65,000 feet near the equator, and as low as four miles or 23,000 feet over the poles in winter. It contains approximately 75 percent of the atmosphere's mass and is by far the wettest layer of the atmosphere, containing 99 percent of the total mass of all water vapor. And it's normally this water vapor that causes a bumpy ride. But there are other monsters lurking in our non-terrestrial territory.

The Turbulence Tempests

- Clear Air Turbulence. CAT normally occurs outside of clouds at altitudes above 15,000 feet MSL, and it's caused by strong wind shears in the jet stream.
- Thermal Turbulence. Localized columns of convective current that result from surface heating or cold air moving over warmer ground. For every rising current, there is usually a compensating downward current also causing turbulence.
- **Temperature Inversion Turbulence.** Even though a temperature inversion produces a stable atmosphere, inversions can cause turbulence at the boundary between the inversion layer and the surrounding atmosphere.
- Mechanical Turbulence. When the air near the surface flows over obstructions, such as trees, plateaus, mountains or structures, the normal wind flow is transformed into swirling eddies and currents.
- Frontal Turbulence. Frontal turbulence is caused by the lifting of warm air or the abrupt wind shift between warm and cold air masses. The most severe cases are associated with fast-moving cold fronts.
- Mountain Wave Turbulence. As air flows over mountains and down the leeward side, a standing mountain wave is formed and air currents oscillate between altitudes. It can extend for hundreds of miles downwind of the mountain range.

• **Thunderstorm Turbulence.** The storm cloud is only the visible portion of a turbulent system. Updrafts and downdrafts often extend outside of the storm, with severe turbulence possible as much as 15 to 30 miles downwind and 5,000 feet above the storm.

It's Thunderstorm Season

While turbulence is normal and happens often, it can be dangerous and each season has its weather challenges. Spring has fast-moving fronts and high winds causing severe squall lines. Summer has thunderstorms and tropical storms. Autumn is usually the quietest season. Winter has higher winds, blizzards and more frequent clear air turbulence. Visible moisture (cloud) is typically indicative of a bumpy ride, but often, air movement that causes bumps is invisible and occurs unexpectedly. In April, the Jetstream and its associated clear air turbulence have shifted north into Canada, usurped by convective turbulence that peaks April through August across North America.

From April 16 through June 15 of 2018, data from my carriers TAPS equipped aircraft (Turbulence Auto PIREP System) reported that there were 200 incidents of moderate or severe turbulence. Approximately 76 percent of the moderate or greater turbulence was below FL200, and 61 percent of all encounters were below 15,000. Take a look at an actual TAPS report from one of my flights at work. It's included with this article and shows both the positive and negative "g" values that we encountered while flying through smallish, "popcorn," or "cotton ball" cumulus clouds. A cumulonimbus monster would have been much worse.

Just the Facts, Ma'am

Thunderstorm hazards include extreme turbulence, hail causing severe structural damage, severe icing, tornados, lightning, microbursts, wind gusts over 50 knots, extreme rain, engine compressor stalls, flameouts, piston engine failures, loss of lift, zero visibility and hydroplaning. Did you notice the occurrences of the words "severe" and "extreme?" If you fly through this crap, you'd better be wearing a diaper – you're going to need one. Twin and turbine pilots operate in the same slice



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> A look at an actual TAPS report from one of my flights at work. Shows both the positive and negative "g" values that we encountered while flying through smallish, "popcorn," or "cotton ball" cumulus clouds.

of the atmosphere as the Part 121 folks, so consider these facts:

- In nonfatal accidents, in-flight turbulence is the leading cause of injuries to airline passengers and flight attendants.
- Each year, approximately 58 people in the United States are injured by turbulence while not wearing their seat belts.
- From 1980 through 2008, U.S. air carriers had 234 turbulence incidents resulting in 298 serious injuries and three fatalities.
- Of the 298 serious injuries, 184 involved flight attendants and 114 involved passengers.

How to Report It

The AIM's list of turbulence classifications can lead one to believe that the levels of turbulence progress from light chop to light turbulence to moderate chop to moderate turbulence – switching back-and-forth between chop and turbulence as the ride gets worse. Despite the "correct" order from the AIM, in practice, most pilots report turbulence as increasing in the following order: <u>Light Chop</u>: Slight, rapid, often rhythmic bumps without significant changes in altitude or attitude. Depending on the type of aircraft (i.e. wing loading), the ride is tolerable and the seat belt sign is not necessary in transport category aircraft.

<u>Moderate Chop:</u> Slightly greater intensity, but still no appreciable changes in altitude or attitude. Typically, it's time to turn on the seat belt sign in large aircraft, and the cabin crew will stow service carts but remain up-and-about in the cabin. Pilots will query ATC for ride reports.

<u>Light Turbulence:</u> Momentarily causes slight, erratic changes in altitude and attitude (pitch, roll, or yaw). Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. The seat belt sign is on, and the cabin crew is seated. Pilots may seek a different altitude or route to escape from the rough air.

<u>Moderate Turbulence:</u> Similar to light turbulence but of greater intensity, although the aircraft remains in positive control. Occupants feel definite strains



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against seatbelts or shoulder straps. Unsecured objects are dislodged. A different altitude or route will be necessary.

<u>Severe Turbulence</u>: Causes large abrupt changes in altitude and attitude. The aircraft may be momentarily out of control. Structural damage is possible. Occupants are forced violently against seat belts or shoulder straps. All unsecured objects, including heavy serving carts, are tossed around. This level of turbulence is often categorized as "uninhabitable."

Extreme Turbulence: Causes the aircraft to be violently tossed about in altitude and attitude. The aircraft will occasionally be out of control, and structural damage is likely. Occupants are forced violently against seat belts or shoulder straps – injuries are likely. All unsecured objects are tossed about violently; some objects may break free from retainers.

All levels of turbulence are reported as occasional, intermittent or continuous. A typical report heard over the radio may sound like this: "L.A. center, Citation Six Romeo Bravo, threeniner-zero – smooth." Or "...continuous light, occasional moderate chop" or "... intermittent light turbulence, request a ride report."

Humpty Dumpty sat on a wall Humpty Dumpty had a great fall. All the king's horses and all the king's men Couldn't put Humpty together again.

In the 17th century, humpty dumpty was not only a drink of brandy and ale but also slang to describe a short, clumsy and dull person, like an egg. And if such a clumsy person were to fall down from a wall, it would be an irreversible event. Like the metaphorical lessons garnered from macabre nursery rhymes, our knowledge, wisdom and a healthy respect for the atmosphere will help to keep our airframes away from an irreversible event, and our tales (homonym and pun intended) from the paring knife. From our pilot-y perspective, few things are as impressive as a 200-knot jet stream, a fire and brimstone producing thunderstorm, the kidney rupturing lenticular clouds over a mountain range or the roll cloud in front of a microburst – if we're on the ground looking up, that is. When airborne near this turbulence-producing phenomenon, don't be a clumsy egg and go to pieces by flying too close. Stay far away with radar on, eyes wide open and your tail tucked between your legs. It will likely add a couple of minutes to your ETA but may save you from a fairytalelike demon – and postpone the need for diapers.

Kevin Dingman has been flying for more than 40 years. He's an ATP typed in the B737 and DC9 with 23,000 hours in his logbook. A retired Air Force major, he flew the F-16 and later performed as an USAF Civil Air Patrol Liaison Officer. He flies volunteer missions for the Christian organiz tion Wings of Mercy, is employed by a major airline, and owns and operates a Beechcraft Duke.Contact Kevin at dinger10d@gmail.com.





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On Final by David Miller



My Father's Son

Have you ever heard someone say, "He or she is just a natural pilot - it must be in their blood?" That has never been said about me.

Instead, they say, "Have you always been funny?"

I have the ability to make people laugh. Almost universally, the first thing that someone asks my wife Patty is, "How do vou live with him?"

"It's his father's sense of humor," she always responds. "He can't help it."

It appears that I was

Dad was a pilot with a

town hotel by that name,

no one in the family ever

Sometime in the 1970s

they required you to have

a name attached to your



Paul D. Miller Jr. September 1, 1945.

number printed in the phonebook. So, Dad chose Ron Ailer. He knew it would appear with the last name first in the book - Ailer Ron.

Every time the phone rang with someone asking for "Mr. Ailer," he knew it was a salesman.

He used to carry a small black and white photo in his wallet of two extremely ugly children. He would whip out the photo when someone asked about his children and regale in their

expression of horror as they tried to say something nice about his awful-looking family.

Today, I carry a picture of two goats in my wallet and I call them my "kids."

Sad, but true.

In the '40s, he ran a live wire off the coil of a Model A Ford and attached it to the steel springs on the rumble seat. He could flip a switch and shock the passengers at will.

Stop laughing.

Our next-door neighbor, Dean Wilson was of particular interest to dad. Dean was gullible. In the '70s, Dean purchased a new Chevy and was bragging to everyone about the incredible gas mileage he was achieving. Over 35 miles per gallon.

What Dean didn't know was that each night Dad would sneak up to Dean's driveway and add gas to his tank!

Stay with me on this story.

Four weeks later, Dad began siphoning gas out of the tank nightly. Dean was beside himself trying to figure out how his mileage was suddenly going to hell.

Flying a jet is a serious endeavor and leaves little room for humor. But I know a guy who has a sense of humor.

Zelda was my office manager during our Sabreliner days. In the '80s, it was customary to "initiate" employees on their first ride in the company jet. Prior to engine start one sunny morning, I asked Zelda to come up to the cockpit. "Zelda, we have a small problem," I said. "One of the warning lights is lit on our annunciator panel. It's probably not a big deal, but we are not exactly sure what it means. I think the owner's manual is back in the cabin under your seat. Could you find it for us?"

You have never seen Zelda move so fast.

The rest of the passengers bit their lips, held their breath and finally laughed hysterically. They had all been through this before. Zelda, however, didn't think it was very funny.

Until we hired the new guy.

Fly safe.

David Miller has owned and flown a variety of aircraft types, from turboprops to midsize jets, for more than 40 years. With 5,000-plus hours in his logbook, David is also Chairman Emeritus of the Citation Jet Pilots Safety & Education Foundation. You can contact David at davidmiller1@sbcglobal.net

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