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Twin & Turbine (ISSN 1945-6514), USPS 24432 is published monthly by Village Press, Inc. with advertising offices located at 2779 Aero Park Drive, Traverse City, Michigan 49686. Telephone (231) 946-3712. Printed in the United States of America. Periodical Postage Paid at Traverse City, MI.

SUBSCRIPTIONS: *Twin & Turbine* is distributed at no charge to all registered owners of cabin-class aircraft. The mailing list is updated monthly. All others may subscribe by writing to: *Twin & Turbine,* P.O. Box 968, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for the United States and its possessions follow: one year $15.00; two years $29.00. Canadian subscriptions are one year $24.00; two years $46.00, including GST tax. Overseas subscriptions are one year $52.00; two years $99.00, U.S. funds. Single copies $6.50.

ADVERTISING: Advertising in *Twin & Turbine* does not necessarily imply endorsement. Queries, questions, and requests for media kits should be directed to the Advertising Director, *Twin & Turbine,* P.O. Box 968, Traverse City, Michigan 49685. Telephone 1-800-773-7798. Website: *www.twinandturbine.com*.

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POSTMASTER: Send address changes and inquiries to Twin & Turbine, Village Press, Inc., P.O. Box 968, Traverse City, MI 49685.

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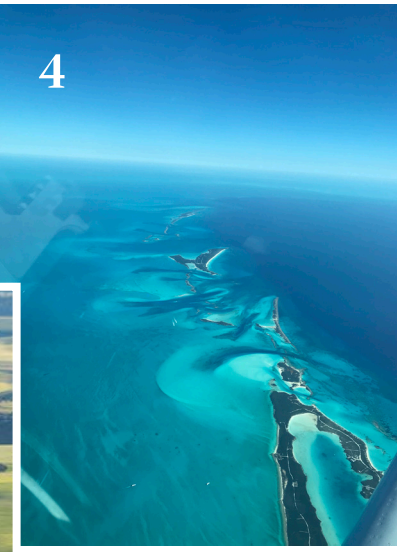

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Editor's Briefing

by **Rebecca Groom Jacobs**

The World is Your Oyster

As the pandemic subsides, flight activity is ramping back up – and private/business aviation is leading the way.

A recent report from FlightAware shows that business aviation activity in 2021 is already surpassing the peaks seen seen in recent years. While this is certainly exciting news, operators continue to face constantly changing COVID-19 travel restrictions and requirements, particularly related to international flying. To help navigate the complexity of such evolving policies, the National Business Aviation Association (NBAA) has developed several resources and tools from webinars, podcasts, and articles, to a COVID-specific webpage (nbaa.org/coronavirus).

Hopefully, the need for such extensive research will soon dissipate as travel restrictions continue to lift...but in the meantime, if you are considering resuming or commencing international flying, here are some of NBAA's top tips (source: Business Aviation Insider).

Know the Differences

Operators that have not flown internationally before need to obtain the latest pertinent information on the proposed route, destination and alternate airport from a variety of sources, including consulting the company security department, if they have one. Then, they need to obtain international procedures training and develop detailed plans that take into account various possible travel scenarios and contingencies.

"As soon as you depart domestic airspace, it's no longer just about flight planning, flying the plane and getting fuel," said Robbie Moon, the director of flight operations for Deel & Winkler Family Office (who has made eight Atlantic crossings to the European Union in a single-engine turboprop). "Now you're talking about customs, immigration, permits and taxes that may be required. This is where using a flight handler becomes important because it's almost impossible to know every regulation for every country in the world."

Additional advice: Know the differences in international weather planning; attend an international procedures course from a major training provider; take survival training.

Pair With an Experienced Pilot

If possible, operators new to international operations would be wise to pair an aviator making his or her first trip abroad with an experienced pilot who brings to the flight deck knowledge of the route.

"Having an experienced pilot with you is key," explained Brian Moore, senior vice president of operations for FlightSafety International, "because when ATC gives you route changes you did not expect, while possibly speaking rapidly in broken English, is no time for the pilot flying to learn the idiosyncrasies between domestic and international flying. On my first international flight, I was left seat, and the guy in the right seat had flown the route before, so he knew what to expect. If we were just a couple of greenhorns, we'd have been so far behind the airplane."

Consider Ground Operations

Once pilots have landed safely at an overseas destination, they need to be prepared for how the FBO will handle the airplane.

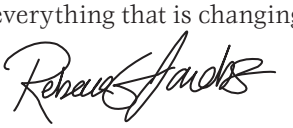
"I found the FBOs overseas to be very busy, so you need to plan a lot more time than you might expect for tasks to be completed because things take a while, particularly at a lot of the European locations," said Moore. "You need to be ready for anything. On my first international flight, the ground crews would not handle anti-ice fluid because it is hazmat, and we were not able to buy fuel that already had fluid in there. So we needed to carry those additives ourselves and figure out the hazmat impact of that."

Other international service considerations include ground transportation availability, aircraft security, catering services and off-duty crew security, even when using an international trip planning service.

Seek Advice from Experienced Pilots

One of the best ways for new international operators to obtain reliable information on overseas operations is to network with those in the industry who know the intimate details of worldwide destinations, said Scott Harrold, president of Sky Aviation International, an aviation consulting firm. Getting advice can be as simple as posting a question on NBAA Airmail or attending the NBAA International Operators Conference. "Even when an operator is using a trip planning service, there are details that other operators know from first-hand experience, from actually making the trips and being there on the ground."

"I recommend that anyone with questions about international operations reach out to NBAA, which has specialists that can either directly answer questions about flying or managing aircraft or can direct that operator or pilot to other resources," added Harrold. "Especially in the age of COVID-19, operators should contact NBAA staff, as they stay on top of everything that is changing rapidly."



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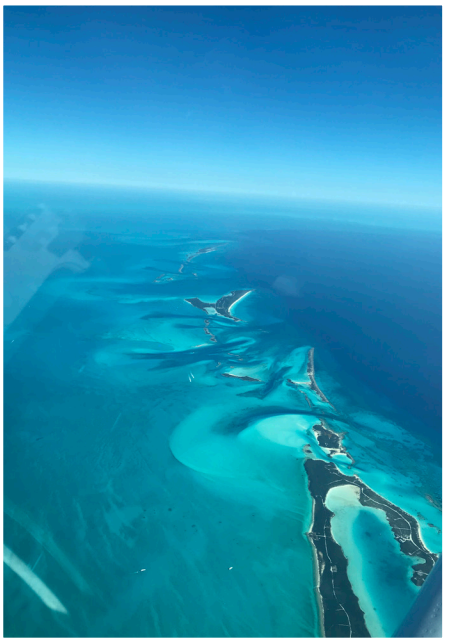
I Want to Break Free

Last February, while watching the Super Bowl in my socially distanced, virus-free "pod," a Doritos commercial aired featuring Matthew McConaughey and the classic Queen song, "I Want to Break Free." That song, being the earworm that it is, became my personal anthem of sorts to figure out as soon as humanly possible when we could safely and legally start traveling in earnest. Last year, we missed out on our annual flying adventure to the Bahamas, something we've been doing for nearly 20 years. With the vaccine roll-out going quickly and more and more states and countries easing restrictions, I was ready to break free.



The ramp at Georgetown International (MYEF) was full of general aviation aircraft.

Last year, like a lot of aircraft owners, the pandemic made it a perfect time to undertake a major avionics upgrade, including a new autopilot. There is rarely a time when putting our aircraft out of service for a month is workable, but it seemed ideal with no trips on the books. The KFC 150 pitch trim servo had been threatening to fail for a few months, and replacing it was surprisingly costly. What started as an autopilot upgrade grew to a much bigger overhaul. In the end, we installed a Garmin G500TXi, Gi275 standby, GFC500, and a GTX345 transponder with ADS-B in and out.

Our friends at Columbia Avionics in Columbia, MO, did an outstanding job on the install and we left the shop virtually glitch-free. If you don't know them, they have done some innovative STC's over the years. Most recently, they certified a complete retrofit package for the Citation 525 that includes the G600TXi, GFC600 autopilot, GTN Xi and GWX75 radar. To say they know their way around a panel upgrade is an understatement.

With this beautiful new panel with all its capabilities installed, I was ready to break free of the Midwest cold and head south to the Caribbean sun. Four friends who happen to be experienced Bahamas island hoppers decided to join in the fun flying a Piper Meridian. We settled on Exuma as our destination and began planning in earnest.

In light of the pandemic, flying to the Bahamas requires a few extra steps. Before entering the country, you must apply for a Bahamas Travel Health Visa. In addition, you must obtain and upload with your visa application a negative COVID-19 RT-PCR test taken no more than five days before the date of arrival. That 5-day requirement sets up your window for obtaining approval to enter the Bahamas. Even if you're vaccinated, you are still required to complete the test and visa application.

It took two days to get our negative test results back, putting us three days before arrival. With results in hand, we immediately applied for the travel visa. Then we waited. And waited. Numerous calls to the number listed on the website went unanswered. On the day before we arrived, one of our friends who was traveling with us sat on hold for four hours before reaching someone in the Bahamas Travel Compliance Unit. She gave the official all of our visa application numbers, and within minutes, we had approval. At that point, we were 14 hours before our planned arrival. (Thanks, Susie!)

How serious are Bahamian customs about the 5-day requirement and health visa approval? Very serious. Asked what would happen if we had arrived without it, the customs official in Georgetown, Exuma, looked at us very sternly and said, "We send you back to the United States." And he meant it. Earlier in the day, the FBO personnel told us of a planeful of vacationers who arrived and were summarily send back to Florida. Just because you applied doesn't mean you can show up and hope they will sort it out once you are there.

Here's another thing we weren't expecting. An approved Travel Health Visa arrives as an email with instructions to download the visa, which includes a QR code. Before departure, I called Odyssey Aviation at Exuma International (MYEF) to assure parking for our two-ship. The helpful representative told us we must arrive with a literal print-out of our health visas – the electronic version would not

be accepted. The Bahamas is famous for its bureaucracy, but this seemed ludicrous. Back to the FBO in Florida to print out our visas, and good thing we did. Customs was not amused when one individual in our party didn't bring a hard copy, but Odyssey was kind enough to print it out and run it back to customs.

Once you're through the customs, you're free to enjoy the islands as long as you follow a few rules: wear a mask in public places and abide by the 10 p.m. curfew. Each day you must complete a short online survey attesting that you are symptom-free and agree to continue to abide by the rules. On day five, you must take a rapid antigen test, which is easy to do at the local medical clinic.

We prefer the quietness of the Out Islands and this trip we visited Exuma with its gorgeous beaches and various small cays you can visit with a boat rental. This trip, our senses were heightened – it had been nearly two years since our last visit, and the sparkling turquoise waters, sugar-white sand, and stark rock outcroppings were more beautiful than I remember. Most all restaurants were open, and the local market had plentiful supplies. The Bahamians we talked to were respectful of the restrictions. With limited health care and no hospital on the island, they are rightfully concerned about the virus. However, their economy is dependent on tourism and we were told over and over, "Thank you for coming back!"

The weather was stellar, and after a week of complete tropical bliss, it was time to plan the trip home. Outbound, Bahamas customs confirmed we had completed the day five rapid test, collected their fees, and we were free to leave. Upon arrival at a U.S. airport of entry, in our case, Ft. Pierce, U.S. customs stamped our passports, ran our bags through a scanner, and let us go on our way. No questions about testing or symptoms.

Are you ready to break free? Although obtaining the Bahamas Travel Health Visa and taking the day 5 test was a pain, the rest of the requirements were no big deal. To us, the beauty of the Out Islands and the pure relaxation you can't help but soak up is well worth it. And there's nothing like flying over the Exuma chain at 500 feet on a perfect CAVU day.

A final word of advice when flying to the Bahamas: when in doubt, print it out (in triplicate, just to be safe.)

P.S. Don't forget to file your eAPIS outbound and inbound. That rule is definitely not one from which you can break free. T&T

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

Using Tech
Without Losing Your Mind

by **Stan Dunn**

I discovered aviation at 19 when I won a free hour in a United Airlines DC-10 simulator. It was one of the most intense experiences of my life. The realistic bumps and vibrations were enough to make me nervous about crashing. I immediately fell in love with the idea of an office filled with gauges, yokes and throttles. I had discovered not only a pursuit but also a profession.

September 11 happened shortly after I graduated college. I was quickly introduced to the cyclical volatility of the aviation sector. It was a horrible time to start flying, but I began anyway. I enrolled in a few classes at Metro State College of Denver, largely to gain access to their fleet of Frasca training devices. The first entry in my logbook was a block for the entire semester, logged on May 7, 2001.

The Frasca is a basic device with a six-pack used as the primary means to establish aircraft orientation. Gyroscopic precession requires resetting the heading indicator against the compass every 15 minutes. There is no flight director or autopilot. It is a touch more sophisticated than what Lindbergh used to cross the Atlantic. I joined the Metro State Precision Flight team before I had logged any time in an actual aircraft. We ran competitions in the Frasca that utilized altitude, heading, and standard rate turns. If you were off altitude or heading, you accumulated points. Climbs and descents had to occur at exactly 500 fpm or you got more points. Like golf, the lowest score won. It was a fun way to develop instrument flying skills.

I walked into the Centennial Airport for my "intro to flight" in June of that year. I marched up to the counter of the local flight club and told the owner that I was "looking to learn to fly." She gave me a direct response, "I have an instructor who can teach you… as long as you don't mind learning from a woman." Barbara endorsed my first flight and went on to endorse the next few pages as well. I would eventually go through a handful of different instructors (Barbara left for a job at Jeppesen), and I eventually finished my flight training in Los Angeles.

My first flight was in N737XE, a 1977 Cessna 172N. The flight school at the FBO had a dozen 172s – nearly all of them 1970s variants. Six-packs provided basic flight information. Fixed cards and VORs provided for navigation. The radios were analog. The only way you knew when the battery was on was the hum of the gyro spinning up. A good portion of my initial cross-country flights were via pilotage. The VORs were used sparingly and only to verify that I was not transgressing controlled airspace around Denver. Hills, antennas, railroad tracks, and the occasional private airport were used to establish position. Dead reckoning with heading, airspeed, and a

clock did the rest. I got pretty good on an E6B. It was old-fashioned in the new millennium, yet a testimony to the possibility of life without digital intervention.

My flight training was on and off for many years. Aviation job opportunities were lousy for the first decade of the millennium. In 2007 – a couple of months after I got my commercial certificate – I landed a job flying Cessna Caravans out of Albuquerque. It had a mechanical flight director, a dual-stack Garmin, an autopilot and a turbine engine. I was in paradise.

One Step Forward, Two Steps Back

The Caravan is a great aircraft, but the DC-10 had put big iron in my blood. You need multi-engine time to land one of those jobs. The pilot market was finally beginning to open up. It wound up being a slim window of opportunity. The Great Recession was on the horizon as the aftereffects of 9/11 flowed into the financial crisis. The retirement age for airline pilots was extended from 60 to 65, right as the stock market was crashing. Nobody could afford to retire. 2008 saw only a dozen pilots hired for the airlines in the U.S. I managed to be one of them, flying the Beech 1900D around the slopes of Colorado. It was back to no autopilot, sometimes no flight director and a six-pack. Add snow, mountains, ice, and a maintenance department under the thumb of the accountants, and you have a nice start to an ASAP report. The vast majority of my perilous stories come from my time with that little airline.

The first generation iPhone came out at the very beginning of my fledgling career. Buzzing around the Rocky Mountains in the twin Beech, it was clear that the phone in my pocket was the most sophisticated piece of electronic equipment onboard. Regulations required GPWS, so a GPS antenna had been installed in the fleet. It was the only bit of high tech on the otherwise stock Beech Airliner.

The failure rate on checkrides was pretty high. There were a couple of classes where 80 percent were sent packing. My class did pretty well in comparison – a 20 percent washout rate. NDB holds are ridiculous little maneuvers. Doing it while hand-flying a powerful twin takes quite a bit of concentration – and, to be frank, a little good luck. Even Chuck Yeager lost a dogfight every once in a while.

NextGen

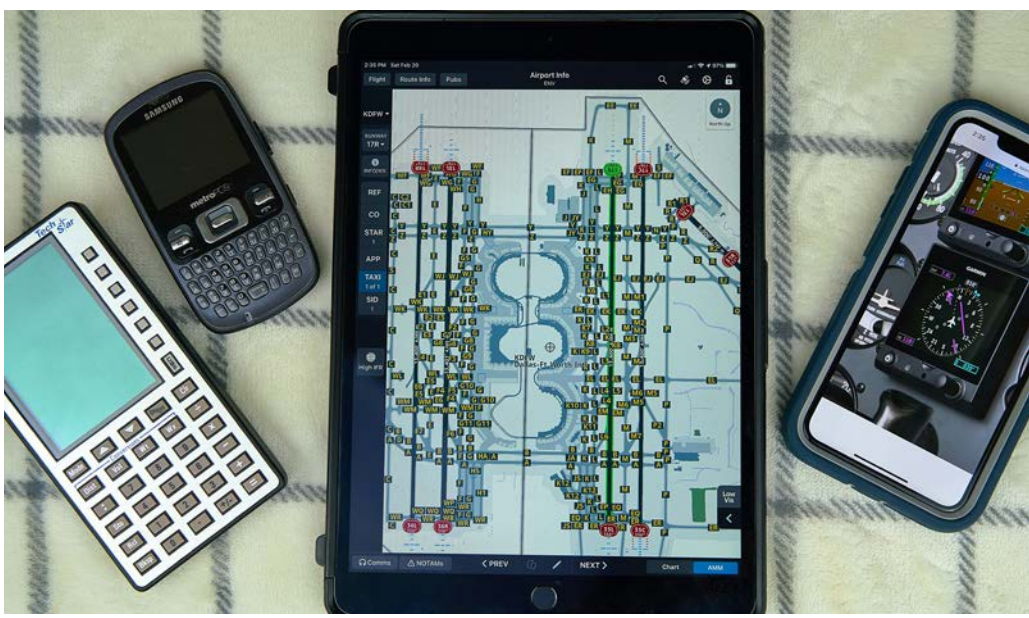
The aircraft I currently fly has enough computers that it's pointless to count. We have an autopilot, autothrottles, vertical navigation, EGPWS, TCAS, FMS – a never-ending cortege of processing power. The flight controls are fly-by-wire. Higher-level logic prevents aerodynamic stalls and will trim the elevator to compensate for the thrust vector of the wing-mounted engines. FADECs keep the engines from exceeding limitations and will abort a start automatically. Oddly, the flight director cannot capture a VOR. If you really need to track one, you have to twist the heading. The message is clear: Why bother with VORs when you have a dual GPS? Use the flight management computer instead. Ground-based NAVAIDs are a dying breed.

Automation ensures compliance with speed limits below 10,000 feet (an altitude that can be adjusted when flying outside of America). The computers are capable of automatically adjusting speed as flaps are extended. It will yell at you if the gear is not down on short final. It will yell at you if you are about to hit terrain. It will yell at you if you are about to hit another aircraft. There are over 100 different annunciations and verbal alerts to draw the pilots' attention to a risk that needs to be managed.

There is an old saw that the cockpit of the future will be occupied by a pilot and a dog: the pilot to satisfy regulatory requirements; the dog to bite the pilot if they touch anything. The first American in space was a four-year-old chimpanzee named Ham (Ham the Astrochimp if you believe it). He was trained to press a lever when a blue light flashed. If he failed to respond in 5 seconds, he got an electric shock. A correct response was rewarded with a banana pellet. I feel a kinship with Ham.

The Upside of Automation

The accident record clearly demonstrates the positive impact that automation has had on safety. Controlled flight into terrain – historically the bane of the broad pilot community – has all but been eliminated as a cause of crashes following the advent of GPWS. Likewise, the probability of aerial collision has decreased in line with the proliferation of TCAS. Automated lighting systems at large airports are helping to eliminate runway incursions as we speak. Fly-by-wire logic is reducing loss-of-control



A useful resource or a source of distraction? Technology can be both.

accidents. The rollout of auto-descent for general aviation fleets is bound to save some lives as well. Navigation systems greatly reduce pilot workload, with departures, arrivals and approaches selectable via simple keystrokes. No more twisting the course, configuring and descending, all while correlating aircraft position with lines on a piece of paper. Moving maps mean that position is never a guessing game.

The increasing danger is that automation dependence will be ingrained into the pilots of tomorrow. The accident record is already testifying to the atrophy of basic flying skills. The company I work for promotes an operational paradox: On one hand, they encourage the use of automation as a means to reduce task saturation. On the other, they encourage pilots to routinely disconnect automation in order to maintain basic flying skills. Over-reliance on automation can greatly increase response times as pilots get stuck trying to manage computers instead of taking direct control of the aircraft. Yet, the failure to utilize automation can produce mental overload leading to mistakes in task-saturated environments.

> “Automation is very good at managing certain aspects of flight, but it is lousy at abstracting solutions to unusual events.

A month after I began flying the Caravan, the autopilot failed on a short hop between Hobbs and Carlsbad, New Mexico. I felt an initial pang of panic – there were a few seconds of “what do I do?!” Nearly all of my time prior to the Caravan had been in aircraft without autopilots. It took 40 hours with an autopilot to make me scared of flying without one. The blip of panic only lasted a few moments, but it remains a flight that I vividly remember.

Similarly, I did not fly my first autothrottle-equipped aircraft until I had 5,000 hours. Three months later, I decided to fly an approach manually. I felt a pronounced stab of uncertainty. Five thousand hours of paying attention to thrust and airspeed had

atrophied after only three months of relegating the responsibility to automation. I made the decision to fly at least one manual approach every month. If the thing fails in icing conditions over Mexico, I want it to be no big deal.

Automation and Pilot Error

Automation is very good at managing certain aspects of flight, but it is lousy at abstracting solutions to unusual events. Programmers can account for the obvious stuff, but coding automation for one-in-a-million circumstances is infeasible. Humans are still the better solution – particularly when lives are on the line. As a result, complex problems are often relegated to the pilots. System failures in automation are not routine, but with hundreds of millions of flight hours logged every year, they are a reality. Nearly all of them end with a successful landing, such as my benign autopilot failure. Some of them result in harrowing flight crew heroics, but nobody pays attention unless the airplane ends up in the Hudson.

The 737 Max ordeal is an example of the peril of handing over basic flying duties to computers (particularly when pilots are kept in the dark). "What is it doing now?" becomes the new danger. Technology only reduces workload when pilots are competent at interfacing with the devices. A healthy bit of skepticism can be an asset: Disconnecting automation and hand-flying is almost always the best solution when the computers do something unexpected. The ability to disengage automation is quickly becoming an important skill for pilots to master. This sounds simple, but it can be confusing on sophisticated aircraft. My current aircraft has over a dozen different switches dedicated to disengaging the various automated systems and alerts.

Technology is in the midst of a 30-year revolution. The way we communicate, consume news, complain about politics, and purchase goods has rapidly evolved. Aviation has been no outlier to this trend. Charles Lindbergh has morphed into Star Trek. Automation allows us (at times) to get away with distractions. It is not an excuse to become lazy. The safety of aviation continues to depend on the competence of operators. The importance of a well-trained pilot continues to be vital. When used properly, automation increases safety. When everything is falling apart, the last line of defense remains the human at the controls. T&T

Stan Dunn *is an airline captain and check airman. He has 7,000 hours in turbine powered aircraft, with type ratings in the BE-1900, EMB-120, EMB-145, ERJ-170, and ERJ-190. Stan has been a professional pilot for 14 years, and has been flying for two decades. You can contact Stan at* **Stan@flyingformoney.com.**

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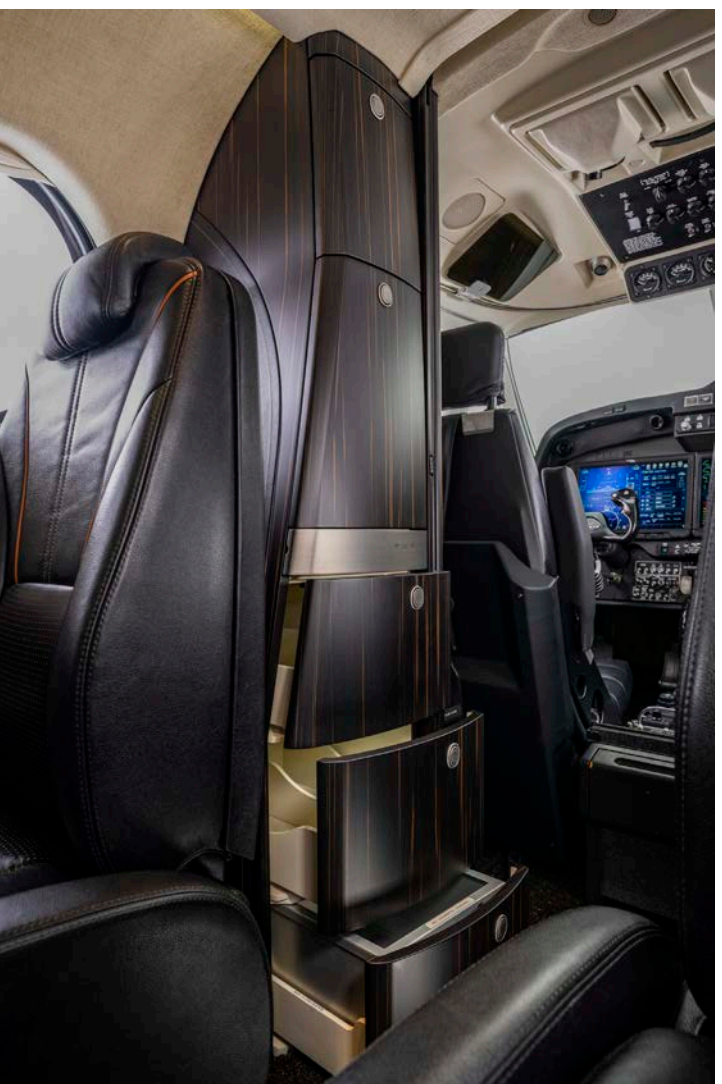

KING AIR 360

THE KING AIR COMES FULL CIRCLE

by **Joe Casey**

So, how do you improve an airplane that is clearly the most successful in its class? Owners and pilots alike have nothing but praise and appreciation for what is truly the "King of the Air" in the turboprop market. Ask anyone who operates a King Air 350 and they'll give high marks in just about every category. So, how can it be improved upon? Enter from stage left the King Air 360.

The King Air 360 emanated from the King Air 350, the flagship of the Beechcraft brand for more than two decades. Hence, they've had a long time to make the King Air 300 series perfect. Did they succeed? Well, there's no such thing as perfect, but I can relate that the King Air 360 is an all-encompassing, truly fantastic airplane with a lot of improvements. As soon as the email from Textron Aviation hit my inbox with news that a flight opportunity awaited, I jumped at the chance and flew to Wichita within the week.

First Impressions

T&T Editor Rebecca and I arrived at the fabulous Flight Operations building on Wichita Dwight D. Eisenhower Airport (KICT) and were greeted warmly by a host of Textron Aviation teammates. We were then escorted to an immaculate white hangar with a brand new gorgeous King Air 360. This particular 360 was all white, awaiting the paint scheme and colors of its future owner. Even in its plain white colors, the 360 looked impressive.

Luke Scott was the Textron Aviation demo pilot assigned to put the King Air 360 through its paces with me. Luke has extensive flight time in many airplanes, but his specialty is the King Air 360. The type rating required to fly any of the King Air 300-series airplanes is the BE-300 type rating, and I'm a DPE with authorization to administer that rating. So, I get to fly in a lot of King Air 300 series aircraft with a lot of King Air 300 series pilots, and I can tell you that Luke was particularly impressive as a pilot and instructor – one of the best I've seen. His knowledge of the airplane was Mariana Trench deep, and we instantly bonded from a professional standpoint.

One of the worries I have when a company makes "improvements" to an already fabulous product is that changes are made to the structure that are really not improvements at all. The iPhone 8 was not better than the iPhone 6S; classic Coke is way better than new Coke; and watermelon Oreos were just terrible. Improvements should really be improvements, not refinements that change the guts of a product. This is good news for the 360 as Beechcraft didn't change the general structure or engine of the 350. In fact, if a 350 and 360 were parked next to each other, only a true aficionado could tell the difference. That aficionado probably would have to read the data tag to be completely confident.

This is also good news because the classic square/oval shape of the King Air fuselage is probably one of the truly perfect aspects of every King Air. The engines are also the rugged and powerful Pratt and Whitney PT6-60's that pilots worldwide have grown to trust and appreciate.

The performance of the King Air 360 is identical to the 350 because the drag experienced and thrust provided are identical. But, that performance is spectacular. I can't think of another airplane that can take off from a 3,500-foot landing strip with 10-plus people, a cargo area (including wing lockers) full of bags and toys, the fuel tanks all topped off, and go 1,500 nm while burning 300 pounds of fuel on each side while cruising at FL300 at 300 KTAS. That's a lot of numbers for one sentence, but suffice it to say the King Air 350/360 will carry a ton, fly a long way fast, and be efficient with fuel. Performance and capability improvements were not the driving force behind the new 360.

Where Are the Differences?

Two areas of consideration received serious upgrades in the King Air 360: safety improvements and a refined interior.

To improve upon safety, Beechcraft started by adding autothrottles. I'll advise that I was a bit skeptical at first that the autothrottles would work well, but once I saw

About the ThrustSense Autothrottle by IS&S

Innovative Solutions & Support, guided by Chairman and CEO, Geoffrey SM Hedrick, purchased a Pilatus PC-12 in early 2000 and decided to develop an autothrottle system for the aircraft. For the next several years, IS&S worked on it until they came up with a very simple, retrofittable actuator that is truly failsafe.

The patented ThrustSense full-regime autothrottle provides automatic power management from takeoff to touchdown, including go-arounds. In addition to total speed envelop protection, the system also protects the engine against operator-induced exceedances such as engine over-torque and over-temp. With the success of the ThrustSense system for the single-engine PC-12, the company turned its attention on using the technology to aid multi-engine pilots.

The ThrustSense autothrottle with LifeGuard has been created to solve the ongoing problem of catastrophic upset that can occur when there is a loss of an engine on a multi-engine turboprop also known as the VMCa problem – when a multi-engine aircraft suffers the failure of one engine. As the pilot tries to maintain altitude and pulls back on the yoke, airspeed reduces to VMCa resulting in loss of directional control.

IS&S bought a King Air in 2018 to use as a testbed for the patented LifeGuard technology. It provides critical VMCa upset protection by dynamically maintaining the maximum safe thrust produced by the "good" engine. As part of the rigorous certification activities, this real-time analysis of control loss due to asymmetric thrust in a sudden loss of airspeed as much as 5 kts/sec, was demonstrated by controlling to the maximum safe thrust of the remaining engine. The pilots maintained directional stability by pressing the rudder on the side of the failed engine and the airplane stayed controllable all the way down to the stall warning. With loss of an engine, even the best pilots can get into this situation and this innovative technology provides better control and safer operations.

"Textron Aviation has shown great initiative and trust by certifying as a standard feature our ThrustSense autothrottle with LifeGuard protection on the new-generation King Air 360 and 260," said Hedrick. "We're also offering the system as a retrofit solution to other legacy King Air models through their service centers. It integrates with the existing throttle quadrant, so installation and operations are very simple."

Like with the ThrustSense autothrottle for the PC-12, the twin-engine version provides a host of features including FADEC-like engine protection, over-torque and under-torque protection, under- and over-speed protection, and more.

them in action, I was blown away. On the takeoff roll, the pilot simply configures the system with the touch of a few buttons and then pushes the go-around button. With the throttle frictions OFF (yes, that a bit weird for a King Air pilot to do on takeoff!) and the go-around button pushed, the power levers advance smoothly to a power setting that is determined by the internal parameters within the system.

There are no computations required by the pilot. The pilot simply pushes the go-around button, releases the brakes, steers the airplane with the pedals, places appropriate aileron into any existing wind, and rotates at V_r. Gone are the days of shifting focus from inside to outside while trying to apply enough torque to take off while not over-torquing the engines. The power lever advancement is smooth and incredibly precise.

(Before I go any further, a pet peeve of mine is for turbine pilots to call the power levers "throttles." Throttles are on piston airplanes and turbine airplanes have power levers. So, the King Air 360 really has "Auto Power Levers," not "Autothrottles." But, autothrottle seems to roll off the tongue more easily, and I think the term is here to stay, even in turbines. Now, I feel better…thanks for the nice diversion!)

While the autothrottles make the takeoff easier on the pilot, the real advantage is while in flight. If an engine were to fail, the autothrottle feature would apply the correct amount of power for that particular situation. And, if the airplane were to slow near V_{mc}, threatening a V_{mc} roll, the autothrottles would decrease the power on the good engine to ensure that the deadly Vmc roll over does not occur. To me, this is a huge safety improvement.

Additionally, once in flight, the autothrottles are integrated into the autopilot system, allowing for incredibly precise aviating. For example, the pilot can select an airspeed, and the autothrottles will adjust the power levers to the exact power setting needed for that regime of flight. I flew an ILS approach to minimums and the autothrottles managed the power levers to keep the speed exactly where I wanted it. It was a truly "hands-off approach" all the way to decision height.

The autothrottle system in the 360 was smooth, integrated, and a fabulous improvement over the King Air 350. This one feature improvement was enough to have me hooked, but there's more.

I was particularly impressed with the multi-scan radar. Basically, the multi-scan radar takes all of the pilot adjustment of the radar out of the pilot's hands. It is simply turned on and the system will adjust the tilt, gain, distance, and a whole host of other parameters to give the pilot visibility of convection ahead. I love this feature because I see lots of confusion in the owner-flown and single-pilot world concerning the use of the radar. Simply put, most pilots (my assessment) don't know how to properly set up and use the radar to ensure an accurate real-time view of the weather. If you are to "go tactical" around thunderstorms (use onboard radar to navigate around storms), you need a good radar system and also know how to use it. The use of radar is more an art than a science, and the skill required

to operate radar is best learned in a multi-crew cockpit over countless hours of watching a master tinker with the radar. But now, with the multi-scan radar on the King Air 360, the pilot has a resource that is far easier to use accurately. I still never advise that a pilot go tactical around thunderstorms, but the multi-scan radar on the 360 is the best radar I've ever seen on a general aviation airplane, and I've seen and used lots of onboard radars in my 30-plus years of flying.

Avionics & Interior

Ergonomically, the cockpit is King Air-esque, meaning that any pilot familiar with any other King Air will instantly become comfortable with the layout of the switches and position of various functions. This is excellent news because the King Air cockpit layout is ergonomically pleasing and super functional. I have to admit, though, that I've got lots more flight time in steam-gauge airplanes and Garmin-equipped airplanes, and I've got a love-hate relationship with the earlier Proline 21 avionics found in many of the earlier King Airs. But, the Proline Fusion is absolutely stellar, easy to use, and incredibly functional. Three giant screens literally fill the entire panel from the left sidewall to the right sidewall with flight instrumentation. Touch-screen panels include everything from gorgeous synthetic vision, flight charts, graphical flight planning, and all of it is integrated throughout the cockpit. Yes, I'm a huge fan of the Proline Fusion.

Author Joe Casey and Textron Aviation Demo Pilot Luke Scott.

One of my favorite upgrades in the King Air 360 is an increase in pressure differential to 6.8 psi from the 6.5 psi differential found in the 350. While 0.3 psi does not sound like a big deal, it is a big deal. It means that a King Air 360 can be operated at FL350 and have a cabin altitude that is under 9,700 feet. In a King Air 350, FL350 was attainable, but the cabin altitude was over 10,300 feet, making FL350 an uncomfortable altitude for passengers and crew alike. It also means that the cabin altitude will be less when the King Air 360 is operated at lower altitudes. To me, FL300 is a great altitude to fly in the King Air 360 because the cabin altitude is low, the true airspeed is high, and the fuel burn is low. With the increase in cabin differential pressure, the flight levels starting with a "3" are now "home" for the King Air.

All of this is well and good for the pilot, and the safety improvements are great. But, the people who write the checks for operating a King Air are usually sitting in the aft right seat in the cabin. What does that person want in an airplane? They want it comfortable and nice.

Beechcraft has grown to be VERY good at creating a cabin that is exquisite. The new refinements of the King Air 360 cabin are everywhere. The seats will literally move in any direction desired – they'll move away from the sidewall, rotate inward, and are probably the most comfortable seats I've ever enjoyed. The seats were designed using digital pressure mapping so that all body types of passengers have a comfortable seat.

Along with the comfortable seating are pleated shades (gone are the rotating polarizers that wear out so quickly), lots of well-crafted interior lighting details, and "King Air" inspired design motifs throughout the cabin. The interior is designed for luxury, mirroring the comfort, precision and tastes found in the most appointed and expensive luxury cars.

For a portion of our flight, I gave up my pilot seat so that Rebecca could move up to the front seat and see the cockpit at FL300. I went to the back and enjoyed the spacious experience. More interior refinements were noted that were impressive. For starters, the noise level was far less than other King Air aircraft. The 360 has "passive noise canceling," which has sound deadeners placed throughout the airplane to deaden the noise. And, when the fore and aft doors are closed, the sound dropped significantly again.

Before I leave this point about noise reduction, I must admit that one of my favorite features in a King Air is "active noise canceling," which is found in one of the four King Air aircraft we manage and fly from my home airport. I love the active noise canceling in that particular King Air and even inquired the Beechcraft staff about why they'd not include that system in every new King Air. But they reminded me that system has a reputation in the marketplace for being a maintenance hog. In my personal experience, the system in our airplane has been flawless in use, but others have complained. The impressive part of the King Air 360 is that the noise level in the passive noise-canceled 360 is certainly less than the earlier-model King Air 300 I regularly fly with active noise canceling. At first I was skeptical, but the passive noise canceling is really impressive.

Maintenance Savings

Another noteworthy change with the King Air 360 versus the other King Air models is the new and improved maintenance program. Earlier King Air airplanes have a Phase 1/2 in one year and a Phase 3/4 in the next year. So, all four phase inspections occur within two years. In the King Air 360, the same inspections occur within a *four-year* period.

So, the amount of maintenance that is required is less. There are still hourly maintenance items, and I'm sure the maintenance requirements will be different for different owners who operate their airplanes more or fewer hours in a given year. But, overall maintenance should be less for an owner in a 360 compared to any other type King Air, and that is significant.

I think Beechcraft did a great job of upgrading to the 360. There's no radical departure from what anyone would expect in a King Air, but there are obvious refinements and improvements. Autothrottles, a higher differential pressure, upgraded avionics, and a better experience for the back-seaters make the King Air 360 a worthy investment for the owner who wants the latest and greatest safety improvements and passenger comfort. I love the King Air line-up of airplanes, and the 360 is the best King Air ever to roll off the factory floor in Wichita. If you are looking for the best King Air, take a 360-degree view of the market, and you'll end up with the King Air 360. T&T

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

The Worldwide General Aviatio

owner/operators and chief pilots of these air

100%

TOTAL MARKET COVERAGE

JETS - 17,806

CHIEF PILOTS & OWNERS

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

TURBOPROPS - 12,801

CHIEF PILOTS & OWNERS

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

PHOTO BY JESSICA AMBATS

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

TWIN PISTON - 6,872 OWNERS

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

HIGH PERFORMANCE MOVE-UP SINGLES - 5,726 OWNERS

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

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The Value of Prop-er Care

The importance of propellers and the people who keep them turning.

by **Dave Franson**

Propellers come in all shapes and sizes. There is the fixed-pitch wood variety that make great office decorations. There are high-tech six-blade composite designs like those that power the C-130 Hercules. And let's not forget the first effective aircraft propellers carved out of spruce, designed and engineered by the Wright Brothers. Wilbur and Orville were the first to realize that the propellers were airfoils, too, and they fabricated and shaped the Wright Flyer's two 8-foot diameter blades after extensive research and experimentation with shapes in their self-built wind tunnels.

The Wrights tested them in their Dayton bicycle shop using a two-horsepower motor. They added a twist along the blade's length to create a more consistent angle of attack for the blade, ensuring that it pulled a consistent amount of air toward the plane with each rotation. A recent historical summary produced by Hartzell Propellers reported that the Wrights' design produced a maximum efficiency of about 70 percent. Today's propellers are around 90 percent efficient.

Like the airplanes that utilize them, propellers have evolved considerably over time. When you consider all the variants produced and all the attention paid to creating more efficient, durable technology, it's obvious that the Wright Brothers were not just bicycle mechanics. Not only did they design and build a craft capable of sustained flight, they created a platform for an impressive array of interwoven technologies that they meticulously researched, developed, fabricated and modified into an incredible collection of products that spawned multiple industries. It's no wonder the Wrights spent a significant amount of time after 1909 in court, defending and trying to protect the systems they designed. Needless to say, propellers were among the most important. Their innovative design moved aircraft propulsion from an idea to a reality.

Orville Wright actually inspired Robert Hartzell to start manufacturing hand-carved propellers from his walnut wood factory in 1917. Since then, the sharing of insights, developments and technological innovations has evolved into the rule rather than the exception – and the basis for the regulatory environment in which improvements have flourished.

Rebecca Williams is director of parts and propellers at Yingling Aviation, a full-service maintenance, repair, overhaul (MRO) and fixed base operator at Wichita, Kansas' Dwight D. Eisenhower National Airport. She says communication and cooperation, even among competitors, are key to continued advancement in propeller design, efficiency and safety.

"In truth, we all work together," Williams said. "Many of the propeller shops are either recommended, OEM factory-trained and certified, or OEM authorized service providers. The collaboration among propeller service providers worldwide has helped us expand the scope and quality of our overhaul, repair and final assembly of propellers. In some instances, we (propeller shops) are the customer, and in others, we are competitors – but we are really a family."

Williams also credits the Worldwide Aircraft Propeller Association (WAPA), which meets annually, creating a forum to address concerns being raised in the field. "We know each other and

share bulletins and information and ask each other 'what are you doing about this issue,' and 'what should we do to improve our industry standards for customer support?"

Randy Lammon is a 25-year Airframe and Powerplant mechanic who has been at Yingling since 2004. He currently serves as the company's lead propeller specialist.

"From a technical perspective, we don't want there to be any accidents," Lammon stated. "The manufacturers put out required inspection guidelines for well-established reasons. Propellers are technically a shelf-life item. There are certain things we do to protect the integrity and durability of the products, but the hardest part of maintaining propellers may be to get the customers to pay attention to them. A neglected prop can degrade the performance of the aircraft – and pose a real safety problem if left unaddressed."

Lammon promotes some basic guidelines a shop technician considers foundational:

- Read and follow the owner's manual
- Keep your propeller logbook up to date
- Maintain and properly grease your propeller (and be careful not to 'over grease' it or you could throw off the balance)
- Don't ignore recommended maintenance intervals or service bulletins
- Midlife inspections and reseals are a good idea
- Refresh paint to protect from corrosion
- Stay up to date on FAA advisory circulars
- Make a visit to your local propeller shop occasionally

Of course, there *are* a lot of owners that do maintain and care for their propellers as prescribed by the OEM, and others who get just as excited about new propeller developments as they do about engine or avionics upgrades. They want the latest technology and improvements, including things like better take-off performance, alloy leading edges for erosion protection, more ground clearance, and less cabin noise. Established propeller shops are where they go to make sure the upgrades are done right.

Yingling has been a leader in propeller service for more than 50 years. Like Randy Lammon, Jeff Sawyer, an A&P mechanic, authorized inspector (IA) and licensed pilot, actually began working in Yingling's Service Department in 2000 and moved into the prop shop full time in 2010. He, too, is a protégé of Leroy "Red" Phillips. Phillips launched the firm's propeller service in the 1950s and spent a half-century working on them until his death in 2006.

"Red knew just about everything and everyone there was in our business, and he did his best to help us

– and them – adapt as the industry and the technology changed," Sawyer pointed out. "There are still guys like Red out there in the propeller world. They've created new techniques and technology to improve our processes in the repair stations – things like a report for service bulletins similar to CAMP – but specific to propellers and automated blade measuring systems using laser sensor technology, MRP tracking software, and, of course, specialized tooling," he said.

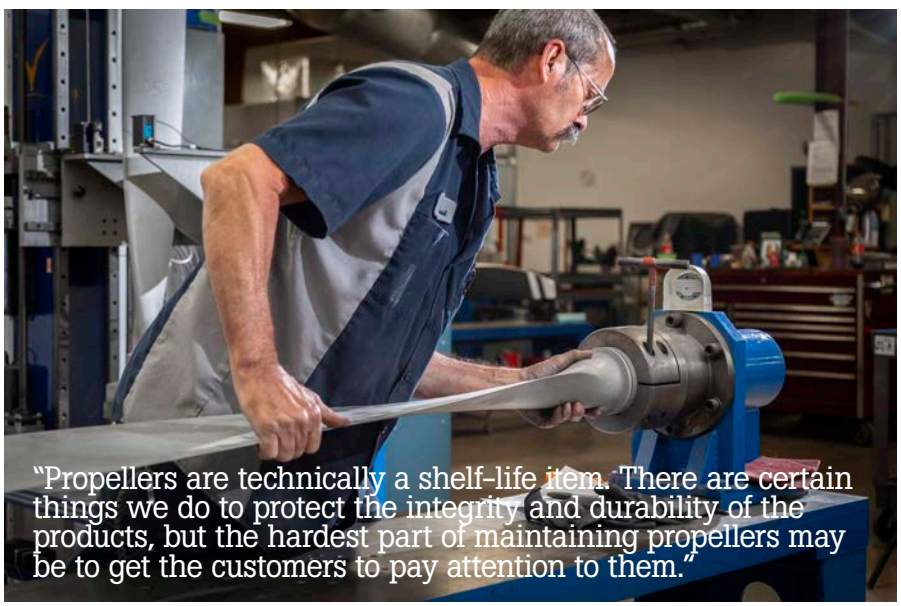
Sawyer shares a pilot's perspective in advising customers to "always inspect your propeller before flight. Look for surface irregularities, dents, delamination, scratches, corrosion. Know what repairs can be made in the field. When in doubt, let your local prop shop check it out!"

"Don't forget the same applies to your spinner and hub. Check for surface damage such as cracks, ensure the spinner and attaching parts are "normally" tight, and take a glance at the back of the hub and ensure the hub's surface is not damaged. Unless it's absolutely necessary, avoid high static RPM on dirt, gravel or rocky runways. Even glancing around the ground or ramp and removing any debris can go a very long way in protecting your propeller," he advised.

He also recommended wiping the propeller with a lightly oiled rag after each flight, especially if flying in a corrosive environment. When it comes to the propeller's finish, he cautioned against a "spray can" overhaul – just putting a quick coat of paint over problems. Know the correct procedures for your paint. It is important to maintain good paint coverage, one for safety and another for longevity. Better yet…call your local propeller shop to ensure it's done right.

"Some things just don't occur to operators, I guess, such as avoiding pushing or pulling the aircraft by the propeller blades or spinner," he added. "I also suggest that, if you are flying a twin over the same consistent flight pattern, it's a good idea to occasionally rotate your propellers. Finally, I personally would not use reverse except in short-field landings or emergencies. You can control your speed by taxiing in beta without producing thrust and it will reduce potential blade damage."

Rebecca Williams and Randy Lammon of Yingling Aviation.



"Propellers are technically a shelf-life item. There are certain things we do to protect the integrity and durability of the products, but the hardest part of maintaining propellers may be to get the customers to pay attention to them."

Another savvy industry veteran is Bob Finke of International Propeller in Lincoln, Nebraska. He fits the mold of Red Phillips and touts the collaboration and cooperation of the "propeller community," too. He spent 25 years at Duncan Aviation before he and another former Duncan colleague, Scott Lau, started International Propeller five years ago. Bob is on the board of WAPA and says, "It's awesome – we communicate with other members virtually every day to find overhauled or used parts, compare techniques and do what we can to keep our clients' costs down. I have email addresses for virtually every prop shop in the world," he added.

Finke also has a vast worldwide clientele. International Propellers was named the Exporter of the Year for the Midwest Region three years ago by the Small Business Administration (SBA). "We deal primarily with turbine operators but we have lots of owner-pilot customers, too. My current inventory includes everything from metal single-engine aircraft props to five-bladed composite models for the King Air 350 – and if I don't have what a customer needs, I have the means to find it quickly," he said.

At the home of Raisbeck Engineering in Seattle, Washington, Director of Sales Rob Richardson has been helping owners maintain and upgrade their propeller-driven aircraft for decades... and he has seen lots of changes over the years. Raisbeck has been developing performance and aerodynamically designed enhancements for OEM production aircraft since 1982 and received its first STC for propellers in 1985.

"Back in the 1980s, we were working on corporate-owned, crew-flown turboprops, both Part 91 and Part 135 operators. Now, a lot of those same airplanes are privately owned

and flown. Those operators all want to go fast and have the best performance available. They're willing to spend the money to upgrade the prop just like they do with the airframe and electronics."

"We see cooperation between propeller service providers and even MROs because we're all trying to deliver quality support and enrich our customers' flight experience. The number of FAA propeller repair stations in the U.S. is probably around 50, so we all know each other," Richardson commented.

"It used to be that the propellers and cowlings were the last things to be addressed during mandated inspections – right before the airplane went back to the operator. That perfunctory check allowed a lot of them to go back into the air without proper lubrication or with corrosion issues, and that could produce a dangerous situation."

"We have seen a lot of aircraft with high-time props. The operators think they're saving money by stretching them to the limit. But, when they finally get around to inspecting them, the blades all need to be replaced. At $7,000 per blade on a pair of four-bladed props, the cost to repair the old props gets pretty close to the expense of buying all-new, zero-time replacements."

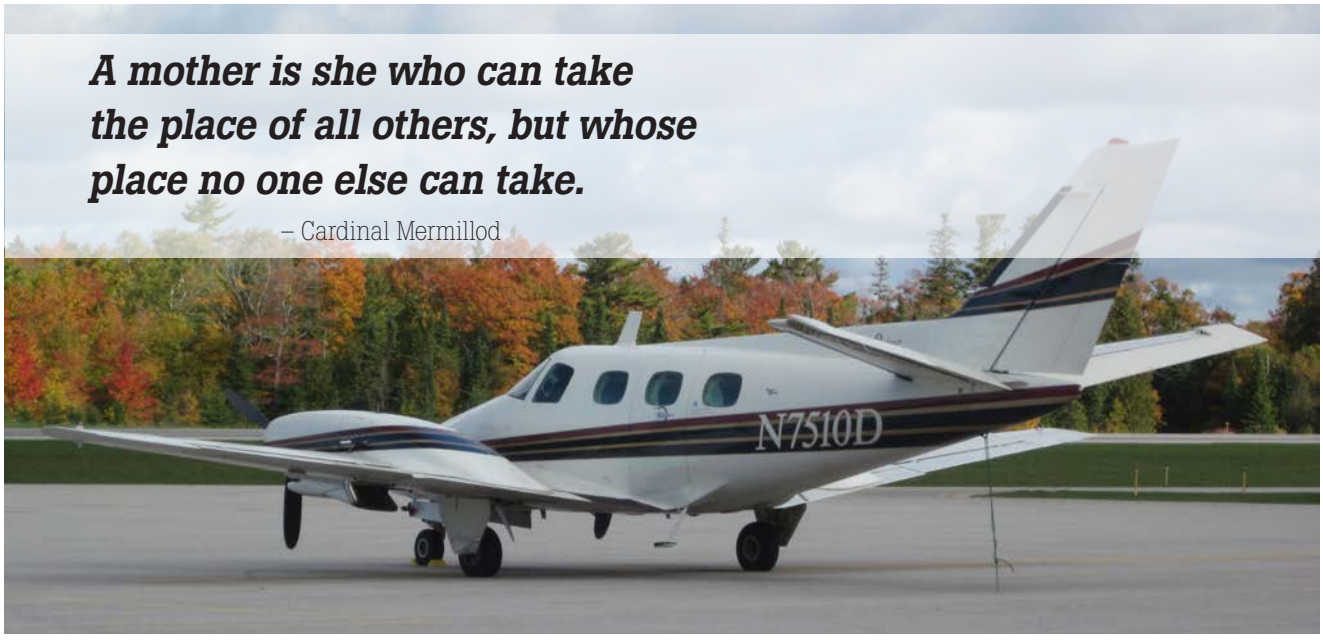
The network of propeller manufacturers, maintainers and prop shop operators really is, in Rebecca Williams's words, "a large but small group." They aren't vast in number, but their role in keeping the flying public safe is significant, even if it's often overlooked. But that's okay with them. They actually prefer to be like the products they service: quiet, efficient and indispensable! T&T

Dave Franson *is a veteran communications executive with more than 45 years of experience with NBAA, Allied-Signal Aerospace, Learjet and Cessna in Wichita, Kansas. He is currently the president of the Wichita Aero Club. You can contact Dave at* **davefranson@mac.com.**

by **Kevin R. Dingman**

Raising a Pilot

The moms of pilots are alike because we pilots are alike.



A mother is she who can take the place of all others, but whose place no one else can take.

– Cardinal Mermillod

Dear Mom,

You always encouraged our interests, skills and sometimes our whims. Thanks for the typewriter. I used it to write tales about Boy Scouts, my first solo and becoming a private pilot. It's in the hangar office now with the Duke, and I write for an airplane magazine. I even wrote an article using that old typewriter. It was a slow and deliberate process, but the sound of keys striking the paper, levering the carriage return and changing sheets of paper made me feel like a real writer. Topics for my articles seldom wander from the sky and I get lots of nice mail from readers. I write about flying and about airplanes – except this month. This month, for Mother's Day, I'm writing about you.

Pilot Psyche: A Mother understands what a child does not say – even a grownup child.

Our readers are experienced pilots and by nature investigative, skeptical and clinical – it's part of how we pilots stay safe in the air. But it's you and other moms that provided the means by which we enjoy and savor the fruits of our clinical behavior. For the moment, let me indulge the analytical facet of our pilot-reader's psyche. After childbirth, the way a woman acts is caused by what's happening in her prefrontal cortex, midbrain and parietal lobes. Activity increases in regions that control empathy, anxiety and social interaction. Feelings of love, protectiveness and worry all begin with electrochemical reactions in the brain. An enhanced amygdala makes her extra sensitive to her baby's needs, while hormones create a positive feedback loop. Mommy, Mum, Mother. Motherhood, Mothering and to Mother. The first words of an infant often sound like ma or mama. This strong association with mother has persisted in nearly every language and every society on earth.

Mom is the female of the species that traditionally held the primary responsibility for the rearing of offspring. Changing diapers, cleaning up Cheerios and SpaghettiOs, providing physical and mental comfort and managing the very first time we did,

well, just about everything. Tempering the exciting, adventurous, and sometimes dangerous influences of the world, including dad's harebrained ideas, are included in your resume. Mothers are more likely than fathers to encourage assimilative and communion augmenting patterns in their children. Mothers are more likely than fathers to acknowledge their children's participation in conversation. The way mothers speak ("motherese") is better suited to support children in their efforts to understand speech. With these admissions, my analytical readers should now be more receptive to this, my less clinically focused, Mother's Day thank you note.

> Mothers hold
> children's hands
> for a short while –
> but their hearts forever.

You and dad raised three boys. The ones known throughout the neighborhood, the school, and the airport as skinny, long-haired and raucous. We never got into any real trouble, but through multiple encounters with each of us, our small-town sheriff recognized us as the "Dingman boys." We were the ones that made babysitters cry, grandma shiver, and you worry. But you persevered and gave us the confidence to succeed. We've grown up to become a machinist, a chemist and a pilot. And we know that:

We made you cry
You wanted that last piece of pecan pie
It did hurt
You were afraid
You watched us sleep
You carried us a lot longer than nine months
It broke your heart every time we cried
You put us first
You miss those days...well, most of them

Caught It on Fire

You didn't like me riding motorcycles or flying little airplanes, and you told me so but didn't stop me. And you like to tell people how, on my first solo, I had a close encounter of the third kind. Well, it was a UFO until it became an IFO (it turns out it was a red party balloon in the traffic pattern). I probably didn't need to worry you by reporting it on tower frequency. Except for the military airplanes you have flown with me in all of them. You and dad even went to Oshkosh, Mackinac Island and golfing a few times in the Duke. Remember the time we crossed Lake Michigan in a Warrior at night in the weather and icing? And don't forget the time dad and I over-primed the 150 on that bitter cold morning and briefly caught it on fire. Now that I'm older with lots of experience, I tell people that whether caused by the pilot, a situation, the weather or by living the experiences of others vicariously, it's

The "Dingman boys" with me on the left.

"Except for the military airplanes you have flown with me in all of them."

the memory of being properly scared that helps develop judgment. And its judgment that keeps pilots alive – and I certainly scared myself a few times.

TP (Tee Pee)

Thanks, mom, for running interference. You protected us but didn't shelter us. I'm sure there are times you saved us from others, from situations and from ourselves. Perhaps even from school officials and our sheriff during one particular high school football game. There was just one student in our small town known for flying little airplanes, and everyone knew that it was the older, long-haired Dingman boy. And I probably didn't get away with the football game caper like I thought. It was a nighttime bombing mission of our high school. We dropped 30-some rolls of TP (toilet paper) on, but mostly around, the school's football field. We knew that, like tail-end Charlie, if we attempted two passes, we would catch flack. So, we made up a feeder slide for the little window of the Cherokee 140 in order to drop the load in just one pass; and we flew high – too high. Bombing accuracy is all about winds aloft and TOF (time of fall). But I wouldn't learn such things until years later in the F-16. Because of this lack of understanding, it was not so much as around the football field and school that the TP landed, as it was the proximate area of the surrounding Michigan countryside. If you lived in Southwest Michigan in the early 70s and one morning found some T.P. on your farm animals, oak trees or TV antenna, sorry about that; it must have been some hooligan.

> Training is like fighting a gorilla.
>
> You don't stop when you're tired.
>
> You stop when the gorilla is tired.

I sold that little, two-seat airplane that I bought when I worked at the paper mill. It was too difficult to move from base to base after I joined the Air Force. And for a long time, I didn't fly anything but military jets. You were glad when I joined the Air Force – you figured it was better than factory work, especially since I lost part of a finger and some of my hearing while working in factories. You were proud that I advanced from enlisted to an Air Force officer. Until that is, you learned I was going to pilot training and then on to the F-16. Once again, you worried about me and airplanes. This time, a stronger and faster airplane – one with a gun, missiles and bombs, but only one engine. It did have an ejection seat, but I don't think that gave you much comfort. You came out to the airport with dozens of friends and family when I flew one into the Air National Guard base in Battle Creek. You bragged and took pictures; your son was a fighter pilot. I fought the training gorilla, and yes, mom, it was dangerous, but I was careful and did a really good job. When the Air Force asked me to man a command post in Germany, I left the military in order to keep flying airplanes. My buddies were leaving too. We all went to the airlines.

You must have been accustomed to the worry because you seemed to take it in stride. Maybe you thought that I'd be flying something less risky – until 9/11, that is. I'm sorry to worry you

again, mom, but we are still fighting battles of one sort or another all over the world – now it's COVID. And even though an airline pilot's life is extremely structured and repetitive, I have had more mechanical and passenger situations at the airlines than I had in military and private flying combined. I've had engine failures, a handful of generator and hydraulic failures and unruly or non-compliant passengers that I've had arrested. Thankfully, the judgment you helped me to develop guided me through it all. But don't worry, I'll be retiring very soon.

No More Pilots

I raised a family of my own, like ours. Except that I had to learn about little girls – turns out they're amazing. I understand that now, even without the neurochemical reactions. None of them had any interest in flying, though, so the flying gene will end with me – no more Dingman pilots. You're probably glad to hear that. The moms of pilots are probably a lot like each other because we pilots are a lot alike. Somewhere in the lives of us pilots, there is someone like you that felt apprehensive about us flying and about little airplanes. But they saw us through the learning process, the cross-countries and the check rides. Some, like you, worry about us still. But the Duke is a very nice, bigger, little airplane. I love it, and I'm careful. So, try to relax, mom. You did a really good job. Thank you for laughing with us in the best of times and sticking with us through the worst of times. Happy Mother's Day. T&T

Kevin Dingman *has been flying for more than 40 years. He's an ATP typed in the B737 and DC9 with 28,000 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**.

Family and Fleet

by **Grant Boyd**

Edward Rose & Sons, a family-owned real estate development and management business, celebrates its 100th anniversary.

Ted Jacobson, Warren Rose, Chris Lentini, 1997.

Warren Rose and Chris Lentini, 2007.

Since its founding, real-estate company Edward Rose & Sons has completed more than 80,000 housing units across 15 states. General aviation has been an integral part and key competitive advantage of the Rose family and their namesake business most of its 100 years.

The family's flying lineage first began with Edward Rose. His beginnings were not in the sky, the construction industry, or even in the United States. Born in Czarist Russia in the late 1800s, Edward immigrated to America as a teenager searching for a new life. With sights originally set on working for the high-paying Ford Motor Company ($5 per day for assembly line workers), fortune would find that he did not find work at the automobile manufacturer and instead became a carpenter. He then quickly moved into building and selling new homes, which ultimately was the foundation of the company that now bears his name a century later.

Business at the time was hard, especially after the stock market crashed and the Great Depression loomed. Even so, Edward persevered. One of his greatest achievements, he later said, would be selling a home in the early 1930s. Other achievements of his life were his marriage to his wife Lillian and raising their four sons, all of whom would work in the building business. Catching favorable winds from soldier homecomings after World War II, the company built an increasing number of quality homes for working-class families.

In the subsequent decade or so following this economic boom, Edward's son Sheldon transitioned from single-family domicile construction to what would be one of the next real estate booms – multi-family, garden-style apartment communities.

Using his own plane, Sheldon would scout out potential land acquisitions and check in on projects under construction. Flying was a natural decision for Sheldon as he had his pilot's license since the late 1940s when he was serving in the Coast Guard. At the outset, he trained in a Piper Cub but later transitioned to a Cessna 190 and then a Cessna 421 Golden Eagle for business purposes. His appreciation and love for aviation extended past its

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Sheldon Rose during a gliding trip in the late 1970s.

undeniable benefits to his business. He also often flew for pleasure and covered the contiguous United States, even dipping down in the Caribbean, the Bahamas, Jamaica, Mexico City and Cuba.

His welcomed copilot was son Warren, who often accompanied his father on land acquisition trips. The flying bug rubbed off on him, and he began flight training at 16, receiving his private license shortly after in 1978. In the subsequent decades, Warren worked his way up from Cessna 150s to Citation jets. Today, Warren still utilizes aviation for business and leisure purposes, whether visiting one of the company's 130-plus apartment communities or taking his family on vacation. Warren holds the following type ratings: CE510, CE525 and CE550. He also owns a Marchetti 260 that he flies for fun and utilizes for upset and recovery training.

Recently following in the family tradition is another eager pilot – Warren's daughter, Frances. Frances has been in and around a cockpit (starting with a Cessna 420) since she was four months old, and her positive attitude towards aviation has remained since. At age 19, she began flight training in a Diamond DA40 and later moved to the venerable Cessna 150. In 2017, she completed her undergraduate degree from St. Olaf College in Minnesota and joined the family business as a land acquisitions analyst. Frances continues to work toward her PPL in a Cirrus SR20, with the goal of completing this initial training this summer. She then plans to jump right into instrument training with multi-engine and Citation type rating work following soon after.

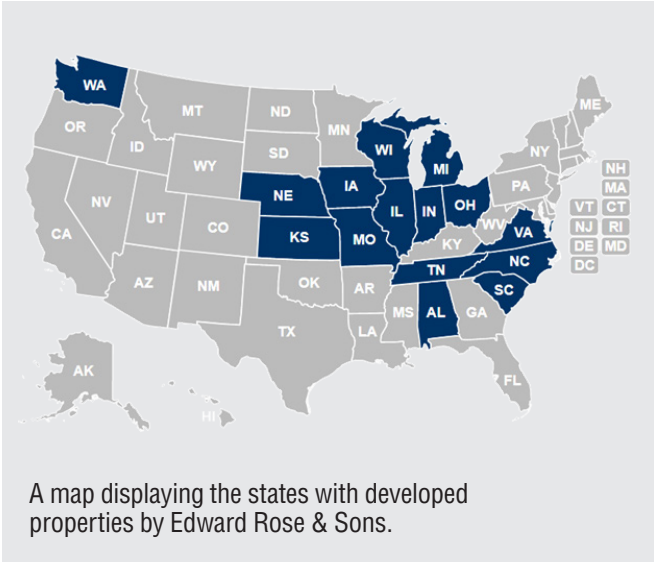
What is unique about her job now, compared to Sheldon's acquisition work years ago, is technology's game-changing effect on the industry. Frances says, "I look for land on which to build apartments as my grandfather did 50 years ago, only I use Google instead of a plane."

Nonetheless, aviation remains an important asset. Throughout Edward Rose & Sons' history, they have operated the following aircraft models: Cessna 421C, Cessna 425 Conquest, Beechcraft King Air 250GT, Cirrus SR20, Cirrus SR22T, Citation Bravo, Citation 510 Mustang, CitationJet, CJ2+, and CJ3+. These aircraft have been based out of Oakland County International Airport (KPTK) near Bloomfield Hills, Michigan. The company also enlists the help of paid contract pilots for various flying missions.

"Some of the division heads [in Sheldon's time] had their own aircraft," Warren said. "While the company does not employ any pilots at the present time, the pilots that operate our aircraft are independent contractors. We currently have about six pilots under contract with Lentini Aviation for their services."

The contracted pilots fly the company's current fleet of three Citation CJ3+'s, one King Air 200, and one Citation Mustang to construction projects (some projects taking up to 10 years) and managed properties across the United States. They each maintain currency in more than one of these aircraft and full-time pilots log anywhere from 500 to 800 hours of flight time a year.

Left: The company's King Air 200. Above: Grandaughter and aspiring pilot Frances Rose in 2008 following the delivery of a CJ2+.



A map displaying the states with developed properties by Edward Rose & Sons.

Kevin Altenburg has flown with the company for 12 years, starting left seat in Citation Bravo's and flying a dozen different aircraft for Edward Rose & Sons in the years since. Chris Lentini, who owns Lentini Aviation, has flown with Rose family members since the 1970s when he would fly with Sheldon to maintain the builder's instrument proficiency and the occasional company trip. He explains that they moved into jets in the late 1990s, which today make up most of their fleet.

"The people [is what I enjoy most]," said Chris. "Warren and I developed a strong bond early in our flying and have maintained that to this day. The quality of the people I fly has always been more important to me than the type of airplane I fly."

Kevin agrees "the people" are what make his job enjoyable. "Whether it is a member of the family or flying a load of folks to a construction project, the people in the back make the job in my opinion. All of the people at Edward Rose treat us like valued team members and part of the family."

Another tenured company pilot is Scott Armstrong, who has been flying company aircraft since 2011. Something which excited him about the opportunity to fly trips for Edward Rose & Sons is the ability to fly alongside CEO Warren.

"As a pilot himself, safety is paramount to Warren. On occasion, we fly together, and it's always a pleasure to share the cockpit with a fellow airman like him. His dedication to safety coupled with his ability to communicate as a crew, his airmanship skills and his servant's heart make him an asset in any cockpit." T&T

Grant Boyd *is a private pilot with seven years of experience in general aviation business from marketing to customer service. He has written more than 85 articles for aviation publications and enjoys learning about aircraft/pilots with unique missions. Grant can be reached at* **grantboyd2015@gmail.com.**

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More to the Story

In the March issue, I mentioned my takeoff abort at Dallas Love (KDAL) and how important it is to document repairs to systems that impact the safety of flight. In my case, the hydraulic reservoir was not serviced after maintenance on the system. I aborted the takeoff after noticing an amber "HYD FLUID LOW" annunciator.

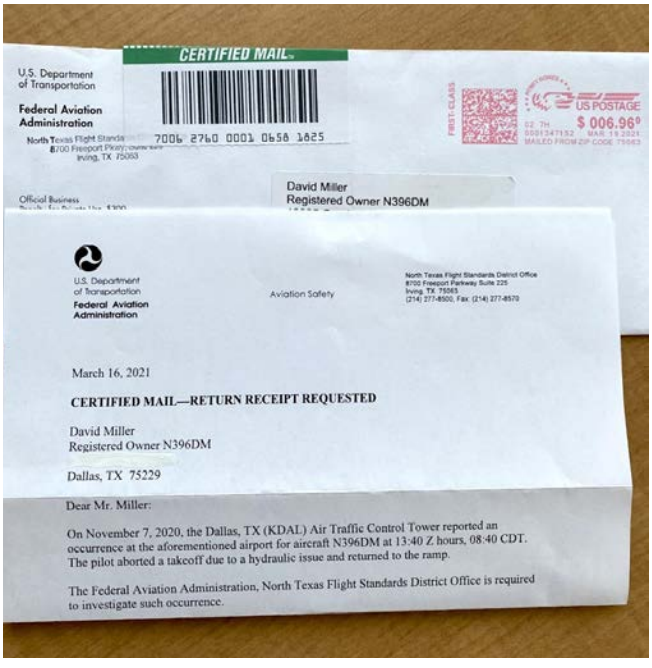
The maintenance facility corrected the issue and bid me farewell. "Not so fast," I argued. "I need a maintenance release for the logbook."

"Oh sure," came the reply. "I'll be back in a minute with that."

My years of vast flying experience told me that a paper trail was important. Or maybe, it was a story related to me from another pilot. Okay, that's what it was. Perhaps his story and mine will save you some grief someday.

My friend departed in his single-pilot jet from a busy Northeast airport on a sunny fall day. As usual, right after liftoff, he reached for the gear control to raise the wheels. Nothing happened. After a quick check of circuit breakers, nothing was amiss. But the gear was still down and locked.

"Tower, we'd like to return back to the airport," he told the controller. "Do you need to declare an emergency?"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Aviation Safety

March 16, 2021

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David Miller
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Dallas, TX 75229

Dear Mr. Miller:

On November 7, 2020, the Dallas, TX (KDAL) Air Traffic Control Tower reported an occurrence at the aforementioned airport for aircraft N396DM at 13:40 Z hours, 08:40 CDT. The pilot aborted a takeoff due to a hydraulic issue and returned to the ramp.

The Federal Aviation Administration, North Texas Flight Standards District Office is required to investigate such occurrence.

they asked." "No, we just have a gear retract problem."

After returning to the FBO, the pilot called the mobile service unit who told him it would be the next day before they could get to him. My friend knew that there was a factory service center just 30 minutes away. He called them.

"What if I just fly over with the gear down and you can take a look," he asked. "Sure, no problem," they said. He did just that and was on his way home after a simple repair.

Three days later, he received a call and a "nasty gram" from the departure FSDO. "We noticed that you departed shortly after a gear issue, and we need to see the maintenance release for the work done."

Oops. It took numerous months to resolve the issue. I was thinking about this exact scenario as I departed the runway after my abort.

Over four months later, I received a certified letter from my FSDO.

"On November 7, 2020, the Dallas, TX (KDAL) Air Traffic Control Tower reported an occurrence at the aforementioned airport for aircraft N396DM at 13:40 Z hours, 08:40 CDT. The pilot aborted a takeoff due to a hydraulic issue and returned to the ramp. The Federal Aviation Administration, North Texas Flight Standards District Office is required to investigate such occurrence."

Details in hand, I called the inspector. He was cordial and polite. I explained the incident and ended with, "and I asked for and received a copy of the maintenance release."

"That's exactly what I wanted to hear," said the inspector. "Just send me a copy and we are good to go." I asked what might happen if I didn't have the maintenance release. The answer was not pretty, especially if an accident had been involved.

I learned a valuable lesson from another pilot. Hopefully, you will, too.

Fly safe. T&T

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

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