

Flight Levels



MAGAZINE

For owners and operators of Twin Commander Aircraft



On the Road Again

Twin Commander Owner John Swift Is Always On the Go

They say print is dead. Clearly they haven't met John Swift.

Swift is the third-generation owner of the John S. Swift Co., a multiservice printing company located outside Chicago, with offices and operations around the world. The company was started in 1912 by Swift's grandfather. His father took over earlier in the twentieth century, and Swift has been at the helm since 1975. Swift

has presided over a company in an industry that has changed more in the last 20 years than it had in the previous 300. In that time publishing has gone from quintessential Manhattan three-martini lunches to a lean global manufacturing business where only the strong survive.

Swift said that his company thrives in part because it has a

strong niche. "We have a strong binding business," he said. "Once you get a niche the customers come to you." Swift Co. prints and binds everything from magazines and books to catalogs and—no kidding—phone books. Central to the company's history, its success, and Swift's ability to quickly and easily visit clients, employees, and vendors, is its embrace of aviation.

The aviation connection began early. Swift's grandfather was an avid pilot and owned a sister aircraft to the *Spirit of St. Louis*. Swift's own love affair with aviation began on a business trip to South Africa. There he took his first flight, and he was instantly hooked. "Once bitten by the bug you can't get enough of that stuff," he said. Although Swift said his father was more numbers-focused



John Swift

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The Time Is Now ADS-B Deadline Looms



Come January 1, 2020, no aircraft will be able to fly where a transponder is required today unless suitably equipped with ADS-B. Maybe you've heard.

After years of debate over benefits, requirements, mandates, and prices of equipment, the ADS-B deadline is nearly here. If your aircraft doesn't have a certified ADS-B Out box, you will not be able to fly in most areas above 10,000 feet, in or around Class B or C airspace, or many other places where a transponder is now required. And while some have speculated that the deadline may slip, the FAA has made it repeatedly clear that the date is firm. In fact, the agency recently released a waiver procedure that

will allow certain flights without ADS-B-equipped aircraft after January 1 of next year, and with the process outline came the clear guidance that repeated waiver requests would be denied. In short, if you want to continue to fly your Twin Commander you must install ADS-B.

There is some good news for owners who have yet to equip. Parts and equipment aren't difficult to obtain. Winner Aviation's Tim Tobey said that while other aircraft types may have to wait eight weeks or more for equipment, a Twin Commander

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Finding the Big Fish

By Brian Harbaugh

If I'm not at work you will usually find me on the water. Far from an occasional hobby or a way to pass the time, fishing is my passion, and I've been doing it most of my life.

To me there is nothing better than the first cast of an early morning. Seeing the steam slowly rise as the sun begins to warm the water, and sitting still in silent anticipation of a good bite are the makings of a great morning. Over the years I've gone from haphazardly casting my line hoping to get lucky to strategically seeking out the best spots. I've learned that a temperature difference on the fish-finder screen means there are fish, and that certain colors of water relate to certain depths. I know which type of fish I can expect in which areas and why.

They say that experience leads to knowledge, and that is

certainly true in fishing. It's true in a lot of things, including intricate mechanical devices like boats and airplanes. I was thinking about this the other day as I was talking to one of our Twin Commander Authorized Service Centers. The strength of Twin Commander's extensive service network is due to the experience and knowledge of the people who work at these independently owned facilities.

Like my ability to scope out the best fishing spots, the professionals who sell, upgrade, and maintain Twin Commanders in the network are highly skilled at seeing things that others can't. A technician at your home airport may be capable of reading the maintenance manual and applying what it says to your airplane, but their knowledge of Twin Commanders stops where the manual stops. They don't have the experience and the

knowledge to see, understand, and do what the technicians at a Twin Commander Service Center can do. In the pages of this magazine are many examples of what I mean. Take, for example, Mike Grabbe's story on checking hydraulic fluid in this month's Commander Tips. A technician outside of the Twin Commander Service Center network may know how to properly check the hydraulic fluid, or why different models of Twin Commanders use different types of fluid—but it's more likely they do not.

Twin Commander Authorized Service Center network technicians have spent years in, on, and under Twin Commanders. The technicians are obligated to attend type-specific authorized factory training, they sell factory parts, and follow factory approved procedures.

The network also benefits from regular communication with the factory. When something is discovered on an inspection at one location that might be important to other operators, the factory communicates that to the network. When new or upgraded parts are available, we communicate it. And when the service centers find repeated issues that need to be addressed, we all share that information. Your local mechanic may or may not have that information.

When you take your airplane to a Twin Commander Authorized Service Center you are guaranteeing that you are working with the most experienced, most knowledgeable people in the fleet. You don't need to cast your line and hope for the best. By choosing to go to a Twin Commander Authorized Service Center, you are going straight to the big fish.




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How to Check Your Hydraulic Fluid Level

By Mike Grabbe

When performing a Twin Commander (non-Skydrol) aircraft preflight check you must first verify two things to get an accurate indication of hydraulic fluid level:

1. The flaps are fully retracted
2. Hydraulic system pressure shows 0 PSI

If either of these requirements is not met, the aircraft will present a false low-level indication. The aircraft gets serviced with what is thought to be the needed amount of the magic red stuff, goes on a trip, comes home, and is parked for a few days. The next time the pilot comes out to the aircraft he finds a puddle of red "blood" on the ground under the left nacelle. Then the questions start flying.

So, how to prevent this loss of the precious fluid? The answer is to perform the following simple process. It does not have to happen right after aircraft shutdown, but should be sometime soon after. First, run the flaps down, then back up to fully retracted, then down part way and finally back up again. This uses some of the residual energy within the accumulator, causing the accumulator piston to move towards the bottom of its bore, pushing hydraulic fluid back into the reservoir. The idea is to drop a lot of the energy out of the accumulator but end up with the flaps retracted before the energy is dissipated.

Now, sitting in the pilot's seat and while watching the hydraulic pressure gage, work the brake pedals. The hydraulic system pressure will start to decrease, and at some point the pressure will take a sudden dive towards 0 PSI. Note that point. Work the pedals a few more times. If the gauge seems

to bounce around 0 PSI whenever you press the pedals you are ready to get a good reading of the fluid level in the aircraft. The reservoir is vented to the atmosphere (not pressurized as was the case with aircraft using Skydrol) so you can open the nacelle cover, turn and lift the cap on the reservoir and note the height of the fluid between the two marker holes in the dipstick.



The distance between the holes is equivalent to about one quart of fluid. If the reservoir needs to be serviced, use clean hydraulic fluid, put the cap back on, close the nacelle cover, and the system is ready to go.

I bet you think I forgot about the pressure gauge needle drop comment. When you are depressurizing the accumulator the point at which the hydraulic system pressure gauge suddenly drops is a very rough indicator of the accumulator precharge. You expect it to be around 600 PSI or so before it suddenly drops. However, if it suddenly takes a rapid dive towards 0 PSI when you start the process that is an indication of a low accumulator

precharge. If that happens I would recommend contacting your favorite Twin Commander Authorized Service Center to have the system checked for an incorrect accumulator precharge that needs to be serviced, or an internal system leak that needs to be fixed.

Eagle Creek Aviation Service's Mike Grabbe has been servicing Twin Commanders since 1974. He has been a factory service representative, and is currently the Twin Commander Factory Authorized Training Provider. He can be contacted at mgrabbe@eagle-creek.com.



What Hydraulic Fluid Do You Have in Your System?

The 690/A/B and early Jetprops left the factory with the hydraulic system serviced with MIL-PRF-5606 fluid. In the early 1980s the factory made a production change from MIL-PRF-5606 to MIL-PRF-83282 fluids. There are some differences between the two fluids. The reason for the hydraulic fluid specification change is because MIL-PRF-5606 fluid has a flash point of 180 degrees F and MIL-PRF-83282 fluid has a flash point of 401 degrees F.

Changing from MIL-PRF-5606 fluid to MIL-PRF-83282 fluid is not complicated. Drain the 5606 fluid and reservice the system with 83282. Note that MIL-PRF-83282 fluid is more viscous than MIL-PRF-5606,

so we do not, cannot, and will not use it in the landing gear struts. All 680T thru 695B Twin Commanders landing gear are serviced with MIL-PRF-5606 fluid only. If someone services the struts with MIL-PRF-83282 then the shock loads transmitted to the structure will be greater than designed for and damage to the strut and/or aircraft structure may occur.

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A Mission to Save Lives

Loss of control (LOC). You've probably heard the term, but you may have no idea what it means. The definitions vary, but center on the idea of the aircraft unintentionally departing controlled flight. What exactly that means, why it happens so often, and what we can do about it are less clear.

Accidents as diverse as thunderstorm encounters and overshooting the base-to-final turn are included in loss of control, which makes the category so diverse it can be difficult to understand the problem. Ed Wischmeyer, an engineer and pilot who has spent time at Embry-Riddle Aeronautical University, Apple, Gulfstream, and others, has come up with a solution that he thinks will help address the core group of these accidents.

Despite a career conducting

research and development in avionics, Wischmeyer doesn't think technology is the key to reducing LOC accidents. Instead, he has developed a series of Expanded Envelope Exercises (E3) that seek to better prepare pilots for the unusual cases that lead to loss-of-control accidents.

Wischmeyer's presumption is that because most pilots fly squarely in the middle of the flight envelope, the risks increase greatly anytime they find themselves well outside that envelope. His exercises get the pilot to the edge of an airplane's normal flight envelope without going over. While many experienced pilots may practice upset recovery training, Wischmeyer said that is meant to address what happens once the pilot has already flown off the cliff. E3 is meant to say, "There's the cliff. Let's stop."

The program includes dozens of different fully developed exercises and ideas for exercises with the goal that each training organization will take the material and create a custom syllabus. Among the long list of exercises are nine that Wischmeyer says form a core group to discover and that have been tested in a training environment. They are:

- Taxiing – Precise aircraft control on the ground as a warm-up.
- Slow Dutch rolls – Bank changes constantly while the nose remains fixed.
- Slow Dutch rolls at a constant altitude – A more difficult variation.
- Fast Dutch rolls – Rapid bank changes can be more disorienting, which makes this variation more difficult. Full aileron deflection is required.

- Turning stall recovery – With banks between 30 degrees and 45 degrees, a challenge for pilots who've never tried it.

- Turning stall, opposite recovery – Recover, but in a turn of the opposite direction.

- Banked sawtooth climb – Alternating series of climbs and descents at a constant airspeed.

- Low speed 60/90 turns – Alternating 90-degree turns with 60-degrees of bank.

- Runway alignment – A chance to reevaluate and reconsider how and when to turn base to final.

E3 is starting to catch on. Utah Valley University is testing the exercises for inclusion in its syllabus, and Wischmeyer has some interest from LeTourneau University in Texas as well. There two senior instructors tested some of the maneuvers in the school's Citabria and told Wischmeyer they were disorienting. To him that's an affirmation. "If senior instructors at a university program in an aerobatic airplane found it disorienting, that tells me we are teaching too close to the middle of the envelope," he said.

Wischmeyer suggests that Twin Commander owners consider a single-engine airplane if they would like the try the maneuvers with an instructor. The roll rates are higher and there's no worry about Vmc.

The next step for Wischmeyer is to further refine the exercises, gain new partners to test, and then do the hard work of making sure pilots know and understand the airplane's full potential. It won't be easy.



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At Your Service Aero Air Has a Long History of Excellence

In the era of large multinational corporations controlling everything in aviation from manufacturing to services, and FBO consolidation run rampant, Aero Air stands as something of an anomaly. The

Commander distributorship.

Over the years Aero Air sold more than 200 new Commanders. That ended when Commander production ceased in the mid-1980s. Aero Air then transitioned

“*The company that began in 1956 is still company owned today.*”

company that began in 1956 is still family owned today, and over the years they've grown from a flight school to an aircraft sales, maintenance, and upgrade facility, as well as major regional provider of airborne firefighting resources and medevac charter.

Aero Air was started by Swede Ralston as the Ralston Flying School. The current name and FBO came in 1962, the same year the company started selling Twin Commanders. At that time the company was also a Piper distributor, and was told it couldn't represent both brands. Ralston flew to Oklahoma City and, carrying a check for a new airplane, convinced Aero Commander executives to award him the

to selling, servicing, and upgrading existing Commanders. In 1998 current president Kevin McCullough changed the company from focusing solely on sales, maintenance and the FBO to a more full-service aviation operator. In 2012 they purchased Madras, Oregon-based Butler Aviation, which brought them into the air tanker market.

Between the medevac charters and air tankers, Aero Air employs 100 pilots who fly 34 aircraft, including Twin Commanders

“*Aero Air's depth of experience starts at the top.*”

outfitted as medevacs. In all the company is 200 employees strong. With five hangars it is the largest operation at the Hillsboro, Oregon, airport. Although it services many different types of aircraft, Aero Air's experience and reputation as an expert on Twin Commanders is what brings in many owners.

Aero Air's depth of experience starts at the top. General Manager Matt Isley is the former President of Twin Commander Aircraft, and he knows the airplane inside and out. Isley speaks highly of Aero Air's Twin Commander capabilities and history. The Factory Authorized



network of Twin Commander fleet operators over the years, and Aero Air sells parts directly to them so they can maintain their own fleets. "If there's anything going on with a Twin Commander part Nick knows about it."

“*Known as one of the most active Twin Commander parts sales centers in the world.*”

Service Center was the first to install a Garmin G600 in the Twin Commander. And its capabilities extend from minor panel upgrades to major restoration. These days, much of the work centers on ADS-B installations, according to Isley. "No one should have issues with their Commander when it comes to ADS-B options," he said.

The company is also known as one of the most active Twin Commander parts sales centers in the world. Nick Freeman runs the parts operation. Isley said Freeman has developed a

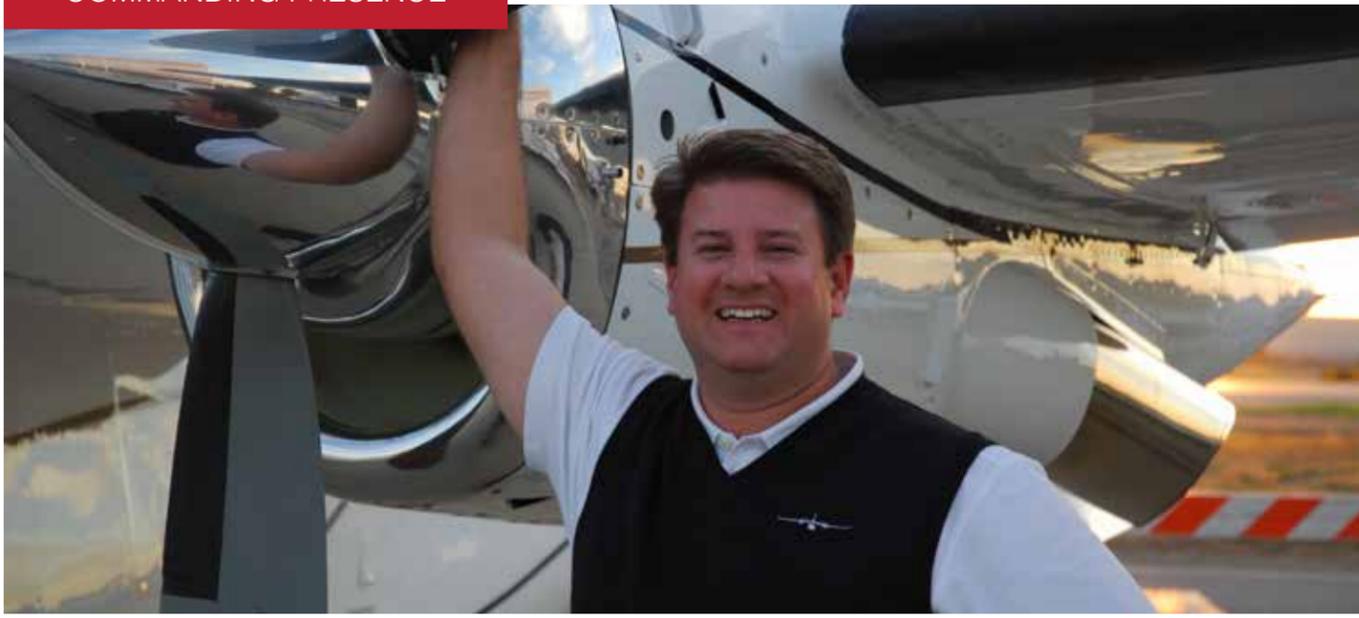
That inventory and expertise extends to the road. Aero Air regularly dispatches a road team to go to a customer aircraft and fixes it in the field. That's one of the many services that are only available from certain Twin Commander Authorized Service Centers. Isley believes strongly in the network's ability to keep the airplanes in top form. "The Commander is so robust and can take so much that some folks don't think they need to maintain it at a service center," he said.

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AERO AIR PRESIDENT KEVIN MCCULLOUGH STANDS IN FRONT OF PHOTO OF COMPANY FOUNDER SWEDE RALSTON.





Matt Isley

Longtime Twin Commander owners and operators probably recognize Aero Air General Manager Matt Isley. He served as President of Twin Commander Aircraft for 10 years before assuming his current position as head of day-to-day operations at Aero Air in April 2018.

Isley came to aviation through Firstmark Aerospace as an engineer and project manager. Firstmark later acquired Twin Commander Aircraft, which gave Isley the chance to

oversee all factory operations including product support, engineering, marketing, and more. Today he uses that wide-ranging skillset to run Aero Air's diverse business units.

A typical day may see Isley managing engineering projects, discussing parts sourcing, interfacing with government and business customers, or dealing with maintenance and other issues. "I like to take on a challenge and this is a good challenge," he said.

Overseeing everything from a firefighting operation to air charter and an FBO takes a

lot of knowledge, and a desire to address challenges. "It's like drinking from a fire hose," he said. "Fortunately, I have a big mouth."

One thing Isley brought from Twin Commander Aircraft was his love of the airplane. He sees the support the company receives from the factory as among the best in aviation. "I almost take it for granted now as a user, but I have an appreciation for what it takes to reach that level." He said working for a Factory Authorized Service Center gives him an even greater appreciation for the network and what it can provide.

At Your Service

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"But it's better to bring it to a service center because we have a strong relationship with the OEM, we know the information, we have the training, and we know all the latest and greatest that's going on from a maintenance and parts perspective."

Isley said they see aircraft all the time that haven't been maintained by a Twin Commander Factory Authorized Service Center. Aero Air can upgrade those aircraft and bring them back to proper factory standards. "It's always interesting to see what was done from a maintenance perspective."

Between Aero Air's expertise and Twin Commander Aircraft's commitment to the airplane, Isley said he feels confident about the airplane's future. "We really value our status as a service center and our relationship with the OEM," he said. "The only OEM we don't have service issues with is Twin Commander." Considering Aero Air has relationships with other top manufacturers that are still producing aircraft – that is a strong endorsement.



The Time Is Now

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owner can usually expect to wait only a short lead-time.

Twin Commander owners also benefit from a wide range of equipment options, including units from Garmin, Collins, ACSS, L3, and more. The best choice comes down to what your panel current has and what sort of capability you want. You can just meet the mandate with ADS-B Out, or you can get the benefit

of ADS-B In traffic and weather delivered to a panel-mounted display or an iPad. Craig Horsely, Winner's avionics manager, said it all depends on how much you want to spend and what you see as the residual value of the equipment when it comes time to sell.

Many of Winner's customers are taking the opportunity to install other panel modifications at the same time, including USB charging ports and autopilot upgrades. Tobey said many Twin Commander owners come into the shop and know exactly what they want. "That's their baby," he said. "They'll research and know exactly what's out there." Even so, an owner can expect multiple quotes on an inquiry, ranging from the minimum required to meet the mandate to more advanced capabilities and big upgrades.

A great way to save money on an ADS-B install is to time it with an inspection or other major maintenance event. Horsely said that it's not inconceivable to save 15 or 20 hours of labor on an installation because the interior is already out. Winner saved one owner 30 hours of labor because he elected to have ADS-B installed during an airworthiness directive inspection.



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Give It the Beans

Importance of Calculating Reference RPM Torque Settings for Takeoff

By Rob Erlick

Being that summer is here, it is important to be aware of power management during a critical phase of flying, such as takeoff. Pilots must ensure the Condition lever is in the correct position in order to achieve the maximum prop RPM.

A takeoff roll at less than 100 percent prop RPM will cause the engine to run at a higher temperature and reach its limit sooner. This is due to a reduction of thrust from a propeller operating at less than 100 percent takeoff RPM, which has the effect of providing less cooling to the engine, and less than maximum thrust.

Typically, of the total horsepower produced by a turbine engine, only a third is utilized to produce actual thrust. The other two-thirds is needed for engine cooling. It is equally important for engine health to calculate the correct reference torque for takeoff and comply with that setting. As most pilots know, with too little torque (below reference torque calculation) takeoff power may not be available. But the information to assess engine health will also not be available. On the other hand, exceed the reference torque and the engines will experience increased wear beyond what is necessary for a safe takeoff.

Is the increased turbine blade wear significant? It would seem that such a minor difference in torque would have negligible effects on such an apparently durable composite alloy turbine blade. However, considering the heat and inertial forces on a rotating blade, each exposure to higher than normal temperatures can play a significant role in the overall life of expensive turbine blades. Consider that a first-stage turbine blade can

experience temperatures as high as nearly 1000 degrees Celsius and centrifugal forces over 9000 lbs (>50,000 PSI) at 100 percent torque RPM. A mere 3 percent reduction in torque can lower that pressure by 600 lbs (approximately 2000 psi), thus reducing the effects of turbine blade creep (blade distortion over time due to excessive heat and pressure exposure).

As depicted below for a typical first-stage turbine blade, excessive temperatures and pressure cause distortion over time. This distortion is reduced or increased based on pressure and temperature exposure levels over the life of the blades.

When calculating takeoff power settings, it's important to ensure access to the most accurate takeoff data. Temperature indications can be erroneous due to conductive radiant surfaces distorting the true free air temperature. Additionally, there may be minor variations from one temperature report to another, depending on location. Be sure to use the best source, or combination of sources. Pressure altitude is also required and should not be confused with other reported altitudes, such as field elevation. The takeoff considerations for power setting determination are:

- Engine torque versus turbine temperature
- Indicated OAT
- Pressure altitude
- Ram rise

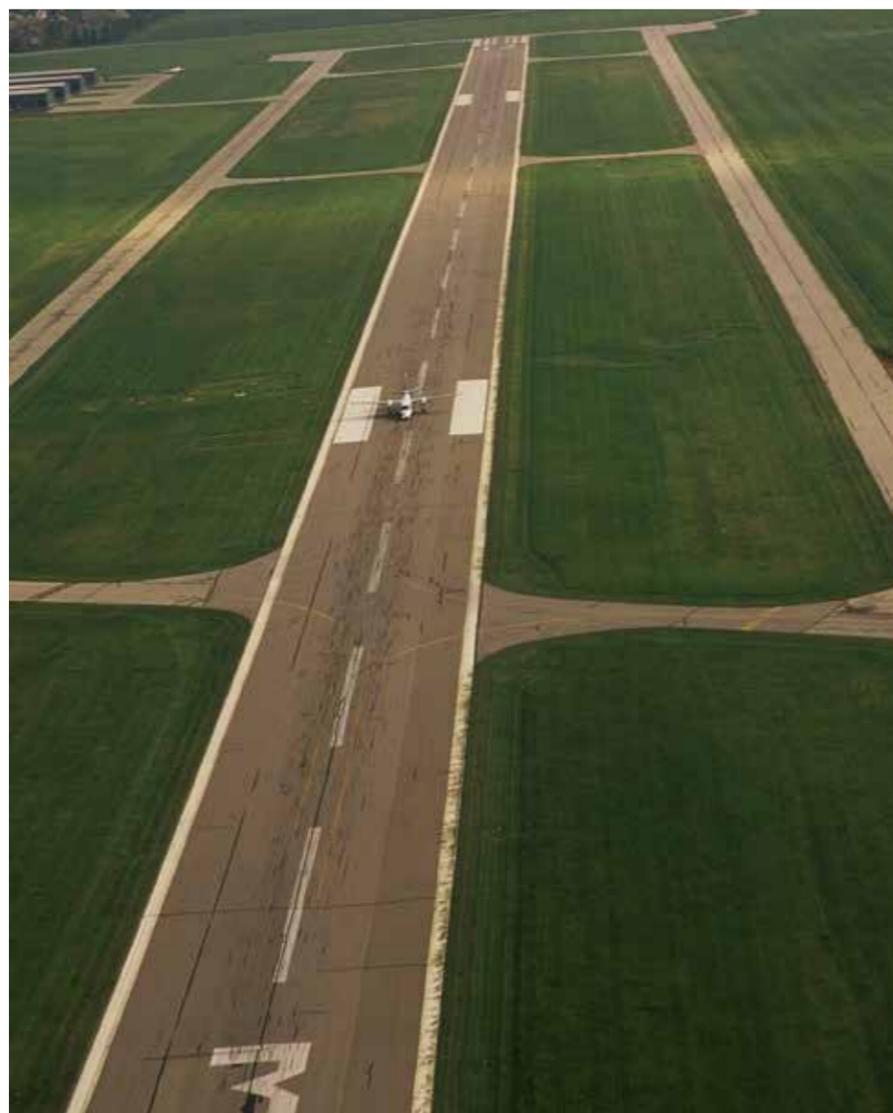
Calculating and complying with the appropriate reference torque prior to every takeoff can provide numerous benefits, from safety (takeoff assurance) to financial (engine health and trending as well as wear reduction). It's important to

have the most accurate information available for takeoff and to execute the takeoff utilizing appropriate reference torque while monitoring engine instrument indications and maintaining proper handling technique. Fly safely and strive to always understand the current condition of your engines.

Please remember, the above tips are intended to be supplemental to the published operating procedures. For a complete study on aircraft planning and operations for takeoff, please refer to the procedures and recommendations published in the FAA/CAA approved AFM and

POM for the appropriate make and model Twin Commander. As always, pilots can make the difference in engine operating life and maintenance costs.

For additional information concerning TPE331 design and operation, please contact Rob Erlick at 480-399-4007, or send an e-mail to Robert.Erlick@Honeywell.com. Honeywell's TPE331 Pilot Tips booklet is available on the Honeywell App or online at <https://pilots.honeywell.com>; register with name and email, point to "Engines" then "TPE331" then click on "Pilot Tips".





What is Business Activity?

Bankruptcy Court Affirms a Taxpayer's Ability to Take General Aviation Deductions for Aircraft that Supports Another Business

By Suzanne Meiners-Levy

General aviation owners and operators are well acquainted with the ability of aircraft to build, support, and grow business operations of all sorts. The clients of our firm conduct myriad business operations ranging from farming to consulting, oil and gas to software, entertainment to medicine. They are as diverse as the economy itself. Meeting travel needs and allowing flexibility are essential roles for general aviation aircraft, but too often the taxing authorities have sought to narrow the scope of the business nature of aircraft, seeking to limit the ability to take aircraft deductions against various revenue streams. In *Re: Williams*, 123 AFTR 2d 2019-1736, (Bktct Ct CA), decided on April 8, 2019, the court validated the taxpayer's election to incorporate aircraft into their business, ruling that the aviation expenses were deductible against business revenue.

Why is the decision in this case even notable, given that it seems only rational that general aviation expenses should be

deductible when an aircraft is used for business? It is common that aircraft used in furtherance of business operations are owned outside of the revenue-generating taxpayer. This happens for a variety of reasons, from liability and transferability concerns to facilitating co-ownership or diversity of use. When the aircraft owners, be it a partnership or corporate entity, files a return that generates a loss, the Internal Revenue Service may seek to limit the flow-through taxpayer's ability to deduct that loss from their other income, either by declaring it "passive" or arguing that it is not business activity. Internal Code Section 469 specifically requires a taxpayer to file an election to treat various entities and taxpayers as a single activity for determining that passive or active treatment, retaining authority in the Commissioner to determine if a taxpayer's election is rational and supportable.

In this case, the debtor engaged in rental real estate and management activities.

Additionally, they owned and operated two aircraft in a separate leasing entity that they then provided, pursuant to a lease agreement, for use to the real estate entities to support the real estate activity. The court indicated that a taxpayer "may use any reasonable method of applying the relevant facts and circumstances in grouping activities," citing 26. C.F.R. § 1.469-4(c) (2), etc. Recognizing the commonality of ownership, the interdependencies of the entities, and the support that the aircraft lent to the income-generating activity of real estate, the court provided that grouping was appropriate and allowable. The court said "the aircraft activity and the management activity of the Rental Real Estate may constitute a single activity with the activity of Rental Real Estate Entities as opposed to be separate trade or business activities of a debtor in their own."

This decision is an excellent example of a court considering the reality of how aircraft are operated to support businesses, and affirms

the deductibility of business aviation expenses. What lessons can general aviation operators take from this decision? First, it emphasizes the importance of filing an election or disclosure, consistent with Revenue Procedure 2010-13, informing the IRS of the activities that a taxpayer seeks to group for the purpose of determining the nature and scope of the undertaking. Second, it is a reminder that the Internal Revenue Code gives knowledgeable and diligent taxpayers significant flexibility in business operations and in incorporating aircraft into those operations provided that there is an overlying profit motive and business intent. This is an important decision in a body of caselaw that affirms the utility of business aviation.

Suzanne Meiners-Levy, Esq. is a Shareholder in Advocate Consulting Legal Group, PLLC, which serves the needs of general aviation clients throughout the country. For more information see www.advocatetax.com.





DECADES OF COMMITMENT

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Overcoming Anxiety in the Cockpit

By Sarah Fritts

Do you get anxious in the cockpit? You aren't alone. Even experienced pilots feel uncomfortable at times. Luckily, there are things pilots can do to combat anxiety.

First and foremost, give yourself a break. Be nice to yourself. You are doing something humans weren't supposed to do! Anxiety is normal at every level of your aviation career. Therefore, you can quit thinking it shouldn't exist. It does. Once you can acknowledge it, you can move on and begin to manage and anticipate the anxiety. Here are a few different types of anxiety and the things you can do to mitigate the effects.

Fly Often

Fly four days in a row. By the end of the four days, you will feel like a million bucks. You'll finally understand what it feels like to be comfortable in the aircraft. Pilots who nickel-and-dime their training will feel perpetually anxious and overwhelmed. The military understands this and so do the airlines. Granted they have the money and their student's attention, but they also do it because it works. Consistent practice is a timeless and proven method for proficiency.

If you want to know what it's like to feel calm in the aircraft, fly multiple days in a row. It's the only way to capture that feeling.

However, flying four days in a row won't solve another cause of anxiety: currency. While flying several days in succession will help you feel in control, it won't do you any good if you don't fly again for another month.

Fly Consistently

It's not a lack of flight hours that creates anxiety in the aircraft, it's lack of currency. I have more than 3,000 hours in both airplanes and helicopters. I've flown in combat, single pilot, and for a major airline. But, who cares! Take me out of the cockpit for a week I'm OK, but two weeks and it takes a second to find the right switch. Three weeks and I start to fumble radio calls. A month and I have to sit in the cockpit for several seconds longer than normal and review the start procedure before I throw switches. I'm sure you can relate if you are a professional pilot. Now imagine if you only fly a couple of times a month.

It's currency in the specific aircraft that reduces anxiety. Experience is important, but

experience only reduces the *amount of time* it takes to feel comfortable after a break.

The National Transportation Safety Board understands this phenomenon well. The NTSB lists the number of hours accident pilots have in the aircraft they crashed. Have you noticed high-time pilots usually crash aircraft they haven't flown much?

What's the solution to the currency problem? I have two recommendations taken directly from Army flight regulations: If you go more than 60 days without flying, your next flight needs to be with an instructor. The airlines let you go 90 days before you have to go back to the simulator, but I prefer the Army's regulation. I know it's expensive to hire an instructor, but so is crashing an airplane.

In addition to a currency standard, you should also set a six-month and yearly hour requirement for yourself. The Army mandates around 48-55 hours every 6 months for proficiency. These numbers are barely enough to make you feel comfortable, but you will at least stay proficient. You should be able to keep your anxiety levels in check flying 50 hours every six months.

Also, if you have gone more than 30 days you should consider your "risk level" to be substantially higher. Make sure you aren't doing anything difficult on that first flight, like a night instrument flight in marginal conditions. It's a recipe for anxiety.

Fly With a Buddy

A lot of pilots have neither the time nor the resources to fly consistently and often. In this case the only reasonable solution is to fly with an experienced copilot. It doesn't have to be an instructor pilot.

Flying with another pilot is a phenomenal way to alleviate stress and anxiety. It can be helpful to have someone double-check your work and catch those radio calls you missed. Even experienced aviators will get the willies flying alone when they have spent their career flying with a crew (like me). I couldn't imagine flying alone in IFR conditions in busy airspace, although I imagine I would get used to it if I did it all the time.

Seek Professional Help

Sometimes even experienced pilots who fly a lot and fly the same airplane still experience anxiety. For those situations, pilots



will need to dig much deeper to find the problem. Was there one specific situation that scared you and now you can hardly climb into the aircraft? Or do you just have a general feeling of anxiety all the time? Or is it only in certain situations like at night in the clouds?

This can happen and is more common than you may think. One solution is to avoid whatever scared you in the first place. However, I only recommend this approach when what you did was extremely stupid and you shouldn't have been doing it in the first place. I'm guessing if you're reading this, you've passed the point of doing stupid "Watch this!" type of shenanigans. So, in general, this is an inferior option.

You'll never get better and tackle your anxiety by avoiding that which made you scared.

It's better to analyze that particular flight and pick out the weaknesses that caused you to get into that situation. Then ask yourself: *How am I going to avoid this in the future? Ask, What went well and what didn't go well?*

Then take it a step further and seek out additional training. Upset recover training, spin training and aerobatic flying are great ways to reduce anxiety.

Finally, when all else fails, seek out professional help. Marketing guru Seth Godin highly recommends cognitive behavioral

therapy, which can be helpful for anxiety. Average performers scoff at the idea of seeking help. But high-income earners and high performers always seek help. They get personal fitness trainers, they hire life coaches, they read self-improvement books and they seek help when life gets stressful.

The best way to rid yourself of anxiety in the cockpit is to fly often, take notes on what went well and what didn't, and keep learning. When all else fails, go get professional help or fly with a buddy. Also, don't forget your fellow pilots. We've all felt the anxiety. Sometimes simply voicing your fear goes a long way to making you feel better.

Sarah Fritts has been involved in the aviation community for over 20 years. She has accumulated almost 2000 hours about half of which are in helicopters and half in a multi-engine airplanes.

She is a West Point graduate and combat veteran with over 15 years leading and managing Army aviation soldiers. She flew the OH-58D helicopter during the invasion of Iraq in 2003, and flew a C-12 in Afghanistan in 2013. She has the Combat Action Badge for getting shot up, an Air Medal with "Valor" for actions during the invasion among other military flying awards and decorations. She currently flies for a Regional Airline as well as the National Guard.

Her website is:
www.thinkaviation.net

Targets and Returns

Traffic and Weather on the GTN Series Navigators

By Keith Thomassen, PhD, CFII

The Garmin touchscreen navigators have broad capabilities in displaying traffic and weather in the cockpit when used with their GTX 345 transponder having ADS-B In and Out capability. In addition, you can merge TAS traffic in the 345 to display blended (TAS and TIS-B) traffic on the screen. TAS has advantages over TIS-B in that you don't need to receive ground stations for it to work, and it sees Mode A, which TIS-B does not. But it doesn't have the position accuracy of TIS-B, so a blend is very useful.

You can also display either FIS-B or SiriusXM Weather—and other weather systems—on various pages. Traffic and NEXRAD can be viewed on the Map page, or you can view a dedicated Traffic or Weather page (each found on the Home page). To display these on the map page, select its Menu, as shown in Fig 1. There, in Map Overlays, Traffic is turned On, but NEXRAD is Off. Other NEXRAD choices are US or Canada for a NEXRAD source. Terrain and NEXRAD are mutually exclusive on the Map page, but there is a separate Terrain page (on the Home page).

Going to Map Setup (Fig 1), you can select the Traffic or Weather tab. As shown here, this is where you choose the weather source for NEXRAD on the map, either FIS-B or SiriusXM. You also choose here whether to put METARs on the map. Off the subject, but critical, under the Aviation tab in Map Setup you can turn TFRs on or off. The Traffic tab is where you select the traffic range around your aircraft, from one to 25 nautical miles, and what traffic you want to see: All, Alerts, or Alerts and Advisories. Alerts are those yellow circles that get your attention,

but you will likely select All.

Traffic Page

Additional traffic display choices can be made from the Traffic page Menu shown in Fig 2. There you can choose the status of ADS-B as Airborne or Off, and the TCAS Status as Operate or Standby. You can choose the motion vector to be Absolute or Relative, and when Relative is chosen, as in Fig 2, it is shown in green. "Relative" shows the traffic velocity vector relative to your aircraft (as though you were standing still). If Absolute, it is shown in white and shows its ground-based velocity. You can also set the vector duration from 30 seconds to five minutes, which is the location of the traffic after that duration (end of the green line).

The symbols representing traffic can be open or filled diamonds, representing non-directional traffic likely from TAS, or have the triangular shape of FIS-B traffic with the motion vector projecting from it. When the diamond is white (within 1,200 feet of your altitude and less than 5 nautical miles away) there is a potential conflict with that traffic. If the traffic alert criteria are met the symbol becomes a yellow circle and a pop-up alert appears on the map, and if you have TAWS installed an audio alert is issued.

In Fig 2 we touched the traffic symbol at +13 and 5 o'clock from our aircraft. In the upper right it shows the tail number of that aircraft, its track and groundspeed, and the closing rate of -48 knots. The green motion vector is not in the same direction as the white triangle, which shows its actual track. In the Absolute view they are aligned.

Also in Fig 2 we have the Altitude Filter set at Unrestricted on the left display, and Normal on the right display. Normal is ± 2700 feet, but you could



FIG 1. MAP MENU (LEFT) TO PUT OVERLAYS OF TRAFFIC OR NEXRAD, AND MAP SETUP (RIGHT) FOR TRAFFIC AND WEATHER.



FIG 2. TRAFFIC MENU PAGE (LEFT) WITH CHOICES, AND RELATIVE MOTION VECTOR CHOSEN (RIGHT).



FIG 3. THE FIS-B WEATHER MENU (LEFT) AND THAT WEATHER PAGE (RIGHT) SHOWN WITH THE LEGEND DISPLAYED. THE CHOSEN PRODUCTS ARE LISTED IN THE UPPER RIGHT WITH TIME STAMPS.

choose Above (-2700 feet to +9900 feet) or Below (-9900 feet to +2700 feet). Unrestricted is -9900 feet to +9900 feet.

Weather Page

From the Home page you can select the Weather page, where you can choose SiriusXM, FIS-B, Connex (from the Iridium satellite system), Stormscope,

or Radar. Stormscope and XM Lightning are mutually exclusive. There is an immense amount of information about these weather products in the Garmin manual, far more than can be covered here, so this is more of an introduction to certain features. In Fig 3 we chose the FIS-B page (right) and its Menu (left).

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Targets and Returns

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If you choose Wind/Temp Aloft (between 1,000 feet and 45,000 feet), NEXRAD will be turned off as they are mutually exclusive.

NEXRAD choices are CONUS, Regional, or Combined. Regional is within 500 nautical miles of the aircraft and there the pixel density is the best (1.5 minutes of Lat/Lon) while the CONUS pixel density is about 5 times less. CONUS data is updated every 15 minutes. When combined, the Regional returns are shown within a 150-nautical-mile circle and CONUS returns are shown beyond that.

If there are Airmets, Sigmets, PIREPs or TFRs on the map, touch them to see textual details. TFRs are shown as yellow squares or circles. Routine PIREPs are blue squares, while urgent ones are yellow. If you display Wind/Temp Aloft, select the altitude and then examine the symbol to determine wind strength as explained in the legend.

SiriusXM weather offers a different and wide range of products for display on the map, as shown in Fig 4 (left), with its map on the right. Too much detail can be overwhelming, so you may want to be selective. Here, you can choose US or Canada for NEXRAD and it is not exclusive with Winds Aloft. But only winds, and not temperature, can be displayed. You can animate the

weather by touching the NXRD button in the upper right corner. Again, you can touch symbols like the TFRs or Airmet areas to get details on them. Also, you can choose orientation of the map: Track, Heading, or North up. Also note that the legend is extensive and you have to scroll up or down to see it all.

To become more familiar with any of the weather products I recommend reading the appropriate parts of the Garmin manual and practicing in your aircraft on flights. There is a wealth of information and learning to use each of these products which will help you when you need it most – in actual weather.

Dr. Thomassen has a PhD from Stanford and had a career in teaching (MIT, Stanford, UC Berkeley) and research in fusion energy (National Labs at Los Alamos and Livermore). He has been flying for nearly 60 years, has the Wright Brothers Master Pilot Award, and is a current CFII.



FIG 4. WEATHER PRODUCTS FROM SIRIUSXM, ARE CHOSEN IN THE MENU (LEFT) AND DISPLAYED ON THE WEATHER PAGE (RIGHT).

INSURANCE INSIGHT

Rates Are Rising



Have you renewed your aircraft insurance recently? Did the rate increase even though you've had no recent claims? If so, you're not alone.

Thanks to a variety of factors, rates on aircraft insurance are rising anywhere from 5 to 15 percent for most customers, according to Dale Barnard of Gallagher, Twin Commander Aircraft's insurance partner. There are numerous factors impacting the rates, including loss history, pilot experience, and underwriters leaving the market.

Both Barnard and Greg Reba, an independent broker with extensive Twin Commander experience, said that about 18 months ago the underwriters told brokers that rates would be increasing across the board. Because they had been steadily declining for years, there was a feeling among underwriters that it was time to recoup losses and readjust the market. Barnard said the Twin Commander fleet has a very low loss history but less experienced pilots are moving into the fleet, among other factors.

Combine those factors with a few high-profile underwriters simply refusing to offer new business to owner-operators, and you have an insurance market that is becoming more and more difficult.

Aircraft insurance underwriting isn't like automobiles. In the auto

market millions of drivers and automobiles means that a detailed statistical analysis that enables an underwriter to predict risk based on demographics, geography, type of car, and more is easy to come by. In aviation the relatively few number of aircraft means an underwriter works off personal aspects of the pilot, the operation, and his or her feelings on the market. That can lead a company to exit a market or refuse to write to a potential customer based as much on gut feeling or personal comfort as any sort of statistical risk. Both Reba and Barnard said part of what is driving up rates and leading to a number of underwriters declining to insure new owners is that experienced underwriters are retiring and their replacements are either unaware of the risk or unwilling to assume it.

So what can you do about it? First, expect an increase and don't immediately jump companies if you receive one. Second, if you're having trouble finding coverage or want to do some shopping, go to a broker who knows Twin Commanders and who you're certain will be an advocate for you. Brokers talk to the underwriters and are in the best position to find the coverage you need.

You can reach Gallagher's Dale Barnard at dale_barnard@ajg.com



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Model 690

By Barry Collman

The Model 690 was the twenty-first to be placed into production, all by the Aero Commander Division of North American Rockwell Corporation at Bethany (Wiley Post Airport), Oklahoma City, Oklahoma.

The 79 examples were built between February 1969 and September 1973, serial numbers 11000 through 11079, although serial number 11070 was not built. Of these, two were initially certified in 1969; 1 in 1970; 1 in 1971; 48 in 1972; 26 in 1973; and 1 in 1974. A factory document describes the Model 690 as "Certified July 19, 1971. Similar to Model 681. Changes include: a) Gross weight increase to 9,850 lbs.; b) wing length increased 30 inches at center wing section; c) AiResearch TPE331-5-251K engines; d) increased rudder area; and e) increased baggage capacity to 600 lbs." The Model 690 was indeed certified on July 19, 1971, under Type Certificate 2A4 and had AiResearch TPE331-5-251K engines, although the first three examples, respectively, originally had TPE331-1-151, TPE331-02-201 and "TPE331-5-251."

The original propellers were 4-blade, 90-inch-diameter Hartzell HC-B4TN-5C/T10178-14 for the first example; the 3-blade, 90-inch-diameter Hamilton Standard 33LF-325/1033A-0 for the second; the 106-inch-diameter Hartzell HC-B3TN-5DL (with either LT10282A+4 or LT10282AB+4 blades) for the third; and the 106-inch-diameter Hartzell HC-B3TN-5FL/LT10282H+4 for the fourth. The last 75 examples had the 106-inch-diameter Hartzell HC-B3TN-5FL/LT10282HB+4. TPE331-



Taken on June 9, 2016, at Scottsdale, Arizona by Jarrod Wilkening, N9175N is serial number 11071. Certificated on April 12, 1973, it was sold via Rockwell International Corp., Aviation Services Division, White Plains, New York, to Wilson Contracting Co Inc., of New Castle, Delaware, on May 11, 1973, and registered to them on June 2, 1973. Unfortunately, it was damaged beyond repair on November 30, 2016, and then offered for sale as salvage without a serial number plate by LAD (Aviation) Inc (dba: Charles Taylor Aviation), located at Scottsdale, Arizona.

5-252K engines can be installed under STC No. SA1024SO.

Gross weight was increased to 9,850 pounds on the prototype but was subsequently increased to 10,250 pounds. Cabin pressure differential is 4.2 psi giving a 13,000-ft cabin at 27,955 feet and a sea level cabin at 9,025 feet.

The 690 was the first Turbo Commander to have a rudder trim tab that was of a taller span (height) and shorter chord than previous models. But the major change to the design was to locate the nacelles 15 inches further away from the fuselage in order to reduce cabin noise. This was achieved by a 30-inch stretch of the wing at the centerline. This moved the point at which the dihedral started to 15 inches outboard of the fuselage.

As is the case with all Commanders, all spars and stringers were continuous at the centerline with all splices outboard of the nacelles. The TPE331-5 series engine, which was then available, had undergone a gearing change resulting in a propeller

speed reduction from 2,000 rpm to only 1,591 rpm. This required the propeller diameter increase to 106 inches, although the tip clearance with the side of the fuselage did increase from 7.5 inches to 14 inches. Vmc considerations because of horsepower and the nacelle location necessitated an improvement in rudder power. As a weight reduction consideration, the new rudder utilized a horn balance instead of the less-efficient leading-edge balance weights used in all previous Commander rudders.

The 690 was the first Commander model to incorporate electric aileron trim. The trim tab was added to the left aileron and driven by an electrical actuator. This tab was also balanced with a "lollypop" type weight. In August 1971 serial number 11003, N9203N, was flown to the U.K. for evaluation by the Royal Air Force for a requirement in a multiengine training role. It was not successful, however, and the Handley Page HP.137 Jetstream was selected instead, probably as a result of a "buy British" policy. Some 26 were

ordered as the Jetstream T.1.

On April 7, 1972 serial number 11007, N9207N, flown by James L. Badgett, who at the time was President of Schick Enterprises Inc, established three world records in FAI Class C1e, Group II for turboprop aircraft in the 3,000 - 5,999 kg (6,614 - 13,225 lb.) weight category. The first record was established for "speed over a closed circuit of 500 km without payload" of 543.36 km/hr (which equates to 293.4 kts or 337.63 mph); the second was a straight-and-level speed record of 609.09km/hr (which equates to 328.9 kts or 378.47 mph); while the third was for altitude in horizontal flight, reaching 10,625 meters (34,859 ft).

Barry Collman's lifelong interest in airplanes began when he was growing up in a house located underneath the downwind leg to busy Northolt aerodrome, an R.A.F. base near London-Heathrow airport. As a young teenager he discovered airplane "spotting"—hobbyists' observation and logging of aircraft by make, model, and registration number. The hobby began to grow into a passion as Collman joined a club of like-minded spotters. At one point he purchased a copy of the January 1966 U.S. Civil Aircraft Register, and thumbing through it came upon the Aero Commander. He was hooked. Eventually he acquired every available FAA microfiche file on Commanders, and since 1995 has made annual pilgrimages to Oklahoma City to sift through FAA records. He now has a database with about 100,000 records as well as a collection of negatives, slides, photographs, digital images, magazines, brochures, knick-knacks—and a very understanding wife. This series on Commander production history originally was written for the Twin Commander Flight Group, of which he is an enthusiastic member.



Scanned from an image taken by an unknown photographer, the photo depicts N9206N, serial number 11006, at Washington Dulles international Airport on May 26, 1972. This was no doubt at an official event. It is finished in factory paint design "3M Waikiki Blue," the colors being Off White, Electric Blue and Shadow Blue. Certificated on February 19, 1972, it was registered to Aero Commander Division, North American Rockwell Corporation on March 8, 1972, and retained for use as a demonstrator. It was subsequently registered as N1JW, N15JW, N150W, N515AR, N690SP, HZ-SS1 (Saudi Arabia), ZK-MOH (New Zealand) and finally N71AH. Currently registered to Sky West Aviation Inc (Trustee), of Albuquerque, New Mexico, it is thought to be operated by GeoFly GmbH., of Magdeburg, Saxony-Anhalt, in Germany.





Higher-End Models for the Tech Savvy Buyer

Everywhere you go it seems flying activity is increasing. Ramps are busy, activity analysis firms like Argus show business is up, flight training is booming, and shops are busy with maintenance, avionics upgrades, and refurbishment projects.

The Twin Commander market seems to also be in good shape, according to Bruce Byerly of Byerly Aviation. The end of last year was especially strong, with eight Twin Commander transactions in December. That was followed by an expected and cyclical seasonal slowdown, which has since started to pick back up again.

In addition to widespread factors such as tax implications and budgets, the end of the year is also a busy time for Twin Commander operators who fly on forestry contracts. Byerly said they typically buy and sell aircraft in the fire off-season to have them ready to go when the season starts again in the late spring.

The supply side is looking only slightly better for buyers than it was at the end of the year. At that time there were only 38 Twin Commanders on the market, compared to 45 now. Byerly said the most competitive market remains late-model

1000s in good condition.

Part of that may be due to the fact that there will always be buyers of late-model top-shape airplanes, but an interesting dynamic has been changing the type of buyer. As older pilots retire, a new generation of owners is coming in with a different set of expectations. Whereas the existing generation maybe learned to fly in the military and lived out aviation's heyday of the 1970s and 1980s, the new buyer comes in technically savvy and with high expectations. Maybe they've learned to fly in a glass-panel equipped Cirrus, and their expectations align to

that modern glass capability and aesthetic. Byerly also said previous customers may have been more interested in finding an airframe and customizing it to their needs. But the newer generation is perhaps less patient and doesn't want to wait a few months through a complete upgrade. "It has to come with a Garmin glass panel of some kind," he said.

Thankfully for those buyers, a wide range of the latest advancements in avionics is available to retrofit to Twin Commanders.



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On the Road Again

< Continued from page 1

and aviation didn't appeal to him, he saw the logic in using aircraft to further the business. First there was a Beechcraft Bonanza, then a pressurized Baron. Swift called it a "maintenance nightmare." As is the case with many Baron owners moving up, the next aircraft was a King Air. Then three more.

When Swift's father retired from the company the rest of the family pulled back on aviation, so Swift bought another Baron to stay active. But he missed turbines. That's when a flyer arrived in the mail from Eagle Creek Aviation Services explaining the virtues of the Twin Commander. "I thought 315 knots true was a typo," he said. He called, and ECAS' Matt Hagans eventually got Swift into a 690B.

Later, a 695B Model 1000 came up for sale. It was the second-to-last ever built. "When I first saw it I thought it was tired and run out," he said. "Matt told me 'When you get it back from us you'll be amazed.' What a ship it was!" Since then Swift has taken the aircraft all over North America, South America, the Caribbean, and Europe. He's completed two hot-section inspections, and is anticipating needing a third soon. All told, Swift estimates he has 6,000 or 7,000 hours in the Twin Commander, a massive amount of experience for an owner-operator.

No compromises

It seems that with aircraft we are always making some sort of compromise. Maybe the airplane is fast, but the range is limited. Or



the range is sufficient but to get the range you can only carry you and the family dog. Or maybe the airplane is good but the entire support network consists of two guys in a rented office somewhere who never answer the phone and can't help even if they do. Despite having the means to move to a jet, Swift has stayed with his Twin Commander because he sees the airplane as one without compromise. "We call it the family station wagon," he said. "It will go anywhere, anytime." He continues to be impressed with the speed, load-carrying ability, range, operating costs, reliability, and support.

For someone who flies his airplane all over the western hemisphere it can be hard to pin down a "normal" trip. But if Swift has one, it's from his home airport in Schaumburg, Illinois, to Miami Executive Airport (previously the Kendall-Tamiami Executive Airport). He typically flies the 1,000-plus miles in fewer than four hours, getting from his home to a vacation home in Key Largo or business in Miami in significantly less time than the airlines could do it.

But for Swift the real benefit is the joy of flying. It's why he has decided to fly himself to Venezuela, and various places in Central America, and about five times back and forth to Europe. "Sure I could jump on Emirates and fly over there," he said. But he loves the flying. "It's like Zen. They are just fun to fly. I can't get enough of them."

For someone who flies multiple trips a week, dispatch reliability and support are critical. Swift's recommendation for finding success with a legacy airframe is to take care of it. "If you take care of something it will take care of you," he said. "Do all your inspections and keep current and the plane will fly, fly, fly." For that reason he gets all his maintenance and inspections performed at a Twin Commander Authorized Service Center. And although he's partial to a few that are closer to home, he also likes to drop in on locations he's never been to before. "It's nice to have a variety of eyes on it."



Over the years Swift has had a few maintenance hiccups, including on the ramp in Rochester, Minnesota. In the winter. Thanks to a phone call to a service center and a lucky hammer he was able to diagnose the problem and get airborne with only a slight delay. It's that robustness and support network that he relies on to get him all over the world.

At more than 100 years old, the John S. Swift Co. continues to thrive in a highly competitive environment. With a combination of modern technology, a range of offerings, and a strong niche, Swift has found success in a changing world. But much of the company's success is due to old-fashioned face-to-face meetings, presentations, and networking. Something made possible by a Twin Commander.



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 - G1000/5000, G950, G600, GTN650/750, ADS-B
- ROCKWELL COLLINS INSTALLATION & REPAIR
 - FUSION/ADS-B/WAAS/LPV/TCAS II
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- COMPLETE PANEL DESIGN AND ENGINEERING

AIRCRAFT MAINTENANCE

- TWIN COMMANDER SERVICE & DASH 10 CONVERSION CENTER
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- RAISBECK & BLACKHAWK DEALER - INSTALLER
- INSPECTION, EVALUATION, TROUBLESHOOTING, REPAIR
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Across the Pond

By Guillaume Fabry

Crossing the North Atlantic is a bucket-list item for many pilots. Some have done it, and many more dream to do it one day. Flying across in a Turbo Commander is not a difficult task, as long as you prepare for your journey carefully. In this "Adventure Travel" we will be discussing how to pick a route and the main differences compared to flying in the United States.

With a range of 1,000 to 1,300 nautical miles we have to plan to fly from the US to Canada, then to Greenland for a fuel stop before heading to Iceland, then to Europe. Flying eastbound is more challenging as you lose time every flight. There is a two-hour time difference from Canada to Greenland (sometimes only one hour depending on where you depart), then another two hours from Greenland to Iceland. If it is 8:00 a.m. in New York, it is 10:00 a.m. in Greenland and 12:00 p.m. in Iceland. It reduces the number of legs you can fly in one day. Going westbound is easier as you gain time every flight.

Sunset in the summer is not an issue as there is almost 24 hours of daylight in Iceland and Greenland. The opposite happens in the middle of the winter; you will have as little as four hours per day. The sun barely rises over the horizon before it comes back down. Note that Greenlandic airports operate from Monday to Saturday from 8:00 a.m. to 5:00 p.m. local, and are closed afterhours on Sundays and holidays. The airports will accommodate any arrivals or departure outside of normal business hours for a fee (around \$1200 for a three-hour window). This is normally not an issue in Iceland as some airports are open 24/7, such as Keflavik, the major airport.

Reykjavik has a smaller window of operation, but is generally open from 7:00 a.m. to 11:00 p.m.

USA to Canada

Flying from the United States to Canada requires filing an eAPIS to leave the country and calling CANPASS (Canadian Customs) in Canada to let them know you are coming. Departing the United States or Canada on an international flight can be done from any airport; it doesn't need to be an airport of entry. However, landing in Canada or the United States when coming from a foreign country requires you to arrive at an airport of entry with customs/immigration.

Canada to Greenland

Any airport in Canada can be used as a launching point. The most common is CYYR Goose Bay, Canada, with two FBOs, two crossing runways, ILS, customs, jet fuel, and nearby accommodations. Other airports are commonly used depending on your range, wind, weather, and destination in Greenland. We often depart Canada for Greenland from CYYR, CYVP Kuujuaq or CYFB Iqaluit. Other airports can be used, such as CYQX Gander or CYKL Schefferville, which have jet fuel. The flights within Canada are not difficult as you are under ATC radar during the flight.

Your flight to Greenland will be your first of three legs over water. Flying a Turbo Commander, you can normally choose between BGSF Kangerlussuaq (north), BGGH Nuuk or BGBW Narsarsuaq (South). Flying the shortest route is usually the way we plan, but pilots will have to be careful with their selection. BGSF Kangerlussuaq was built by the United States during World War II for airplanes crossing the North Atlantic. The



airport is strategically located 80 nautical miles inland and the weather is mostly good all year long. Facilities include a 9,200-foot runway, a LOC-DME approach with minimums at 450 feet above the ground and a control tower with full radar service, meaning that during the descent they will vector you to intercept the localizer. Jet fuel and basic accommodations are available.

BGGH Nuuk is a 3,000-foot runway located on a hilltop on the side of the ocean. It is prone to quick weather changes and fog when the temperature is near the dew point. ATC services are available but there's no radar for the GPS or LOC approach. Finally, BGBW, located in southern Greenland between hills and mountains and at the end of a fjord, is a beautiful airport to use when the weather is clear. The runway is 6,000 feet long with a new RNAV approach with several step-down descents and no radar. You enter uncontrolled airspace descending through FL195 and are on your own until you are on the ground. Traffic information is provided by a radio operator during the descent and

landing in Narsarsuaq but you are responsible for your own separation of traffic and terrain.

As you leave the east coast of Canada to Greenland, you will receive an oceanic clearance with Gander Center leaving domestic airspace, which will include your route, and a speed and altitude to maintain. This allows ATC to keep the separation between all traffic during the crossing as there is no radar. Gander airspace extends past the southeast tip of Greenland, including over BGSF. If you are heading to BGSF, you will be transferred to Iceland Radio as Iceland controls a big area over Greenland, just north of Gander airspace. By default, if you hear Gander Radio or Iceland radio, this means you are talking to a controller writing down your position reports and that means you are in a non-radar environment. If you are talking to Gander Center or Reykjavik Control over water, this means you are under radar or ADS-B coverage and no position report is required.

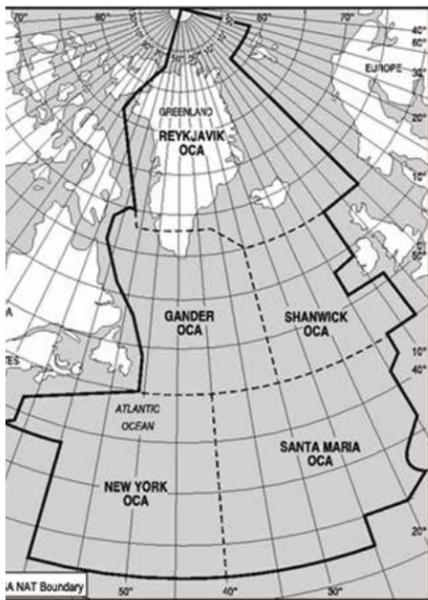
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Across the Pond

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Greenland to Iceland

Iceland installed three ADS-B ground stations over Greenland in the last few years so on a flight from BGSF Kangerlussuaq airport to Iceland you are under ADS-B contact the entire way. This route keeps you in Reykjavik Control airspace. It might not seem like a big deal but the separation under ADS-B for same altitude crossing traffic is 10 nautical miles, instead of 120 nautical miles without ADS-B. So, if you are flying within



Gander Oceanic Airspace (which is without radar or ADS-B coverage), you might be stuck under another airplane until you are 120 nautical miles away from it. Many small jets with limited range have had issues in the past when taking off behind let's say a Piper Malibu. Approaching Iceland, you will get direct to the IAF for the approach in use or vectors for the ILS approach or visual, very similar to any approach in the United States.

Iceland to Europe



The flight from Iceland to Europe is under radar contact the entire way so it feels like a domestic flight. There's no need for position reports. Iceland uses its radar along with a combination of radar overlaps from Iceland, Norway, Scotland and the Faroe Islands.

Here are a few more items that will surprise you along the way if not ready for them:

Altimeters: Once leaving Northern America, the altimeter setting will be given in millibars / hectopascals instead of inches. Most airplanes have the capability to change from inches of mercury to millibars.

Altitudes: Altitudes are standard across the world in feet except in some countries in Eastern Europe, China and Russia. Thus, a North Atlantic crossing will be in feet.

Transition Altitude/Transition Levels: In North America, the transition level and transition altitude both are 18,000 feet. When climbing, we change from local altimeter setting to standard at 18,000 feet and the opposite while coming down. Once leaving North America, each airport will have a different transition altitude and transition level, which will be displayed on the approach plates or given in the ATIS. Transition level is when you descend and transition altitude is when you are on the climb. Any altitude above the transition will be given in Flight Level.

Start-up Clearance: Beginning in Greenland you will need to request a start-up clearance before starting your engines, in



addition to the IFR clearance. This is standard throughout the world and allows ATC to check that there is no delay, slots or issues with your flight plan before you start your engines. Ultimately this would prevent you from having to start and shut down if there was an issue or delay.

Non-Radar Environment: Crossing the North Atlantic, other long stretches of water, or over some countries, radar control will not be available. In this case the controllers will ask you for a position report. Your position reports must include the following information:

- Tail number
- Your position (waypoint, altitude, time)

- Your next waypoint estimate, and the one after. For example, "Gander Radio N1234 over N63W055 FL250 at 1345z, estimating N64W054 at 1410z, N65W53 is next."

Create User Waypoints: Over the North Atlantic you will need to create user waypoint for fixes that are coordinates. Make sure you know how to save a user waypoint by entering the lat/long coordinates, and give it a name so you can pull it into the flight plan.

Guillaume Fabry guides trips for Air Journey (www.airjourney.com), which offers aircraft owners and pilots escorted and concierge tours for destinations around the world.



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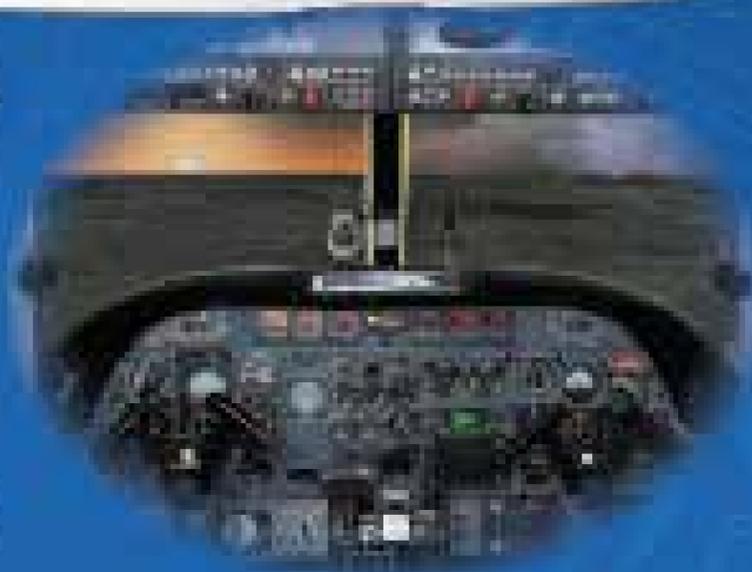


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