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FOR THE PILOTS OF OWNER-FLOWN, CABIN-CLASS AIRCRAFT

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Citation CJ3 Goes Fusion

An Inside Look at the Pro Line Fusion Upgrade

Avoiding Fuel Trouble

Tax Reform: How it Affects Aviation

Five on the Fly: Charlie Precourt

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Cessna Citation CJ3
Courtesy of Paul Bowen Photography

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Saying Goodbye to an Aviation Icon

One of the great pleasures of editing a monthly aviation magazine is that I get to interact with many industry icons, some of which are my personal aviation heroes. Over the past year, I have the honor to work with someone who qualifies in both categories. It was with great sadness that I received an email in early February that Archie Trammell had passed away just a few months short of his 90th birthday.

In the early 1990s, I was a green pilot and by luck had the opportunity to attend one of Archie Trammell's radar courses, which at the time were sponsored by AlliedSignal (Bendix/King), the manufacturer of the RDR radar series. By the time I crossed paths with Archie then, he was already well-known for his thunderstorm research and radar seminars. He was also an accomplished journalist having been a senior editor for *Flying* and editor-in-chief for *Business & Commercial Aviation* magazine. Being a budding journalist and a graduate of the University of Missouri School of Journalism, I was fascinated how he combined his passion for aviation, expertise in weather and radar technology with his talent for the written word. Certainly, that fed my desire to become an aviation journalist myself.

Archie made many contributions to aviation safety, and it is impossible to list them all. Here's my attempt to list the biggest one: It was his life's work to teach pilots the science of convective weather flying and the proper use of onboard radar. Archie didn't just regurgitate engineering data, he actually had a hand in creating it. During his employment with Bendix, he helped develop and then test radar systems – not in theory or on a test bench, but in an airplane flying near and into convective weather.

In 1979, he formed his own company and developed a training program to educate pilots on proper radar use. That led to him lecturing worldwide, training pilots who flew U.S. presidents and for the major airlines, as well as thousands of flight departments and individual pilots. His book *"Flying With Thunderstorms"* contains 150-plus consecutive months of accident analysis, convective storm information and radar knowledge and operational tips. In 2006, NBAA honored him with the Meritorious Service to Aviation award. He also inspired the work of Erik Eliel, another renowned author and lecturer on onboard weather radar use. Archie continued to publish a website free of charge to pilots and write articles for *Twin & Turbine* through 2017.

It is safe to say his body of work ultimately saved lives. As one pilot wrote on his condolence page, "Tilt up, Archie!"

T & T Turns 21

Twin & Turbine was born in the late 1990s with the intent of publishing content of particular application and interest to the pilot flying cabin-class twins, turboprops and light jets. Its founder, King Air owner-pilot Robert Goff wanted to read about products, operational and piloting strategies, technologies and advice focused on the interests of the accomplished owner-pilot. Goff hired me as one of its first editors to develop this content, and at the time, no other publication focused exclusively on this subset of pilots and its unique needs. That statement is still true today.

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As always, I welcome your feedback. Write me at editor@diannewhite.com. 

Dianne

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Airmail

Remembering Archie Trammell



Aviation safety suffered a devastating setback in early February when Radar legend Archie Trammell passed away. Without exception, Archie was the world's foremost authority on the employment of airborne weather radar. A relentless safety advocate, he continued to publish safety-related information and to educate pilots to within weeks of his passing. Quantifying

the number of lives he saved over the 50+ years would be virtually impossible, but "a lot" would be a conservative estimate. The momentum of his life's work will continue to pay safety dividends for decades to come.

Commonly, pilots walked into his seminar wondering how a course on weather radar could consume an entire day. By the time they walked out, they realized an additional day or two would be ideal to thoroughly cover the topic. Resolution of their recently discovered knowledge-gap came through repeat attendance of his seminars and detailed study of everything he published. Those pilots also became his biggest advocates.

Archie's legacy will be his unwavering, life-long passion for aviation safety. Armed with extensive experience, a deep knowledge of radar theory and a detailed understanding of convective weather, he was when necessary, aviation-safety's junk-yard dog. He refused to allow politics, radar "whistles and bells/me-too gadgets" and feel-good solutions cloud the real solutions and information pilots needed.

Archie was selfless, consistently giving credit to other pioneers who mentored him throughout the years. Significantly, he was the last direct conduit to the knowledge given to us by some of the most respected and ingenious minds that ever existed among radar engineers and convective weather scientists – incredible people who have also passed.

It is rare for a person to single-handedly shape an entire profession where the results are life-saving; but that is precisely what Archie did. Now, the responsibility of keeping that momentum going falls to the next generation of professional pilots.

Erik Eliel
Radar Training International

Feedback on Miller's "Routine Departure"

I enjoy *Twin & Turbine* and the articles each month. We operate out of ADS frequently, and I know exactly what you're talking about on the turn east and level at 2,000 feet. We operate several Gulfstreams and with a two-pilot crew it makes life much easier. I own and operate a 58P Baron, and

I can confirm single-pilot operations are very difficult and high stress at times!

One SOP we use in our company operation that I've applied to using while operating my Baron is the use of the autopilot. Our company policy is when the autopilot is engaged it is confirmed "on" by both pilots, I had a similar experience when operating my Baron as you had, I thought it was on but was not. I was at altitude and was not a big deal. I decided after that anytime I would engage my autopilot, I would verbally confirm it: Autopilot "ON," heading mode/nav mode.

I've come to use many of our SOP from the company operations manual with my Baron operation single-pilot, although I get many strange looks from my wife riding along side of me thinking I'm talking to myself, it seems to work.

Look forward to your next article.

John Larson
Issaquah, WA

Always enjoy David Miller's articles in *Twin & Turbine*. Just read the latest one in the January issue.

Most of the trips I do are single-pilot in a King Air 90 with Pro Line II equipment. Like everyone, I am constantly maintaining vigilance for any kind of bust. I try to, as much as possible, repeat the same processes over and over.

With regard to altitude I make it a practice to input my initial assigned and all subsequent assigned altitudes into the alerter/preselect. Doing this I get the chime and alert whether I am hand-flying or the autopilot is engaged. I make call outs – "one to go" and "capturing" – the same every time even when I am by myself up front.

My observation is that I hand-fly more than most pilots, and I purposely vary the points at which I engage and disengage the autopilot while maintaining an appropriate configuration with respect to the flight director so as to ease the engage and disengage process. In other words, I prioritize the maintenance of the appropriate presentation on the EFIS.

Keep the good articles coming.

Bruce Chappell
Wilmington, NC

It's always a tough decision on who I read first: David Miller or Kevin Dingman. At the end of Miller's January article "Just A Routine Departure," he asks for suggestions. I have one. Put V_1 before V_r and then rotate.

David W. Naumann
ATP, BE40, HS25

Editor Dianne White responds:

David, you get the award for first person to catch that typo, and I take full responsibility. Thanks for reading!

Airmail

Flying with Purpose

I just wanted to drop you a note to let you know how much I enjoyed reading your "Editor's Briefing" in the latest issue of *Twin & Turbine* (February 2018). I too have always wanted to fly an Angel Flight or something similar. And, I too have always come up with excuses. You have motivated me to try a bit harder this year to fly one of those missions!

Ronnie M.
La Jolla, CA

Editor Dianne White responds:
Thanks Ronnie. For those interested in learning more about charitable flying, check out these resources: aircharitynetwork.org



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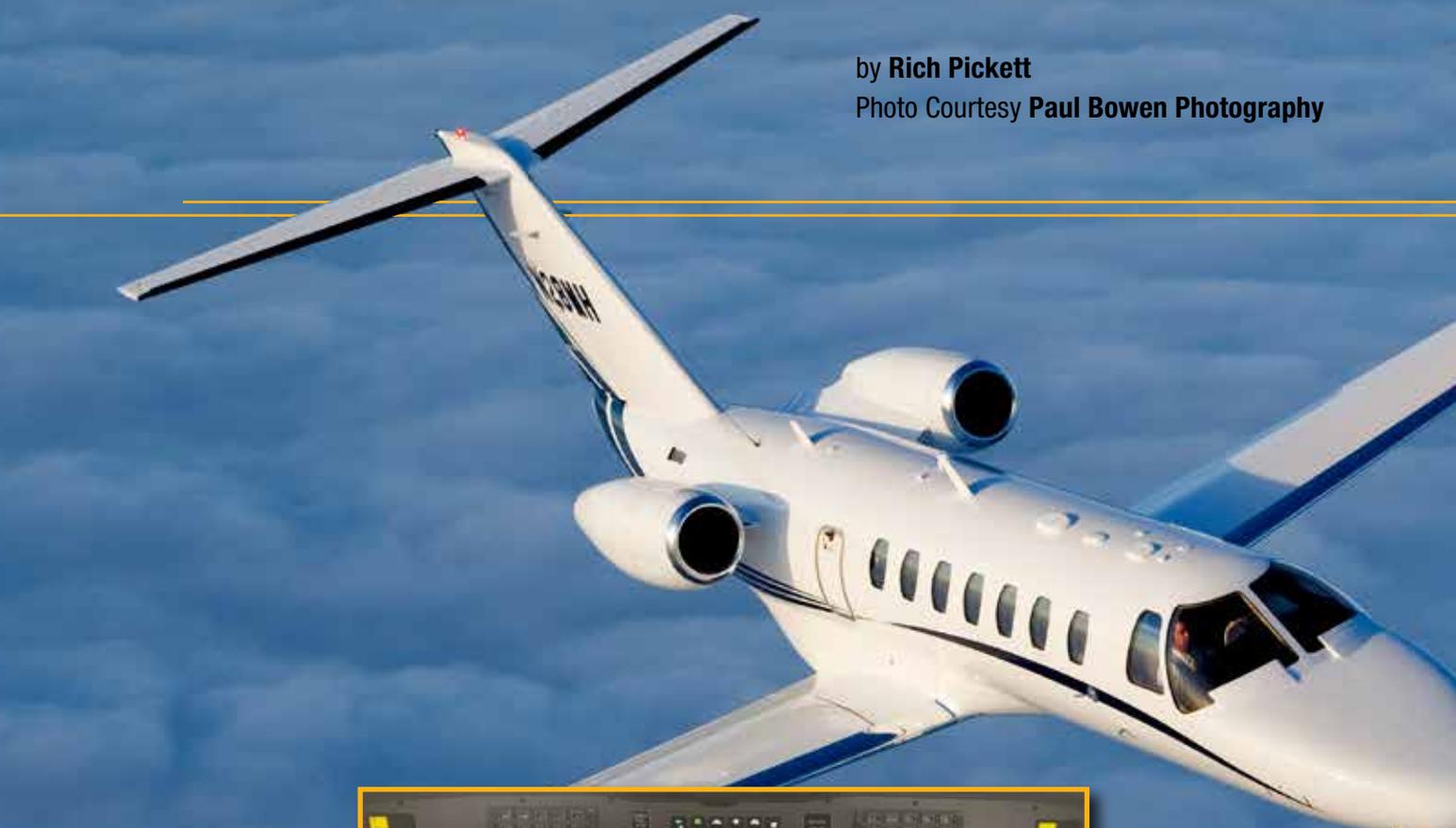
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The Cessna

by Rich Pickett

Photo Courtesy Paul Bowen Photography



RICH PICKETT PHOTO

Citation CJ3 Goes Fusion

A much-needed flight deck upgrade brings the venerable light jet favorite into the future.

How do you improve your favorite airplane when that airplane is a Cessna Citation CJ3? Fast, capable, and enjoyed by its owners and pilots, the latest avionics upgrade is to the Rockwell Collins Pro Line Fusion suite promises to make a great aircraft even better.

One of the most popular jets of the CitationJet series, the CJ3 was first introduced in 2005. Originally equipped with the Rockwell Collins Pro Line 21 avionics suite (and later with the Garmin 3000 in the CJ3+), it provides a perfect platform to install the new avionics.



Riuh Pickett Photo

The System

Rockwell Collins first offered the Pro Line Fusion avionics in 2012 and now has installed it in 10 additional aircraft including the Gulfstream G280 and Global 5000 and 6000, Embraer Legacy 450 and 500, C Series aircraft and others. These aircraft utilize Fusion avionics without touch capabilities, controlling the system with Cursor Control Panels (CCP) and Multifunction Keyboard Panel (MKP). With the introduction of the Pro Line Fusion in the new Beech King Air 250 in 2015, Rockwell Collins implemented touch-screen technology. With that system successfully implemented, the company looked at other aircraft for installation, which leads us to the CJ3.

Line up and wait: The Fusion cockpit consists of three touch-enabled displays, called AFDs (Active Flight Display), two CCPs (Cursor Control Panel) and one MKP (Multifunction Keyboard Panel).

While the Pro Line 21 equipment was state of the art when it was developed in the early 2000s, and updated since then to WAAS, graphical XM weather and other features, it doesn't offer some of the capabilities of contemporary systems such as the Garmin G3000/G5000 series or Honeywell APEX in the Pilatus PC-12.

The Flight Management System (FMS) flight planning capabilities in the Pro Line 21 equipment is considered to be one of the best by pilots, thanks to its advanced flight planning functionality. In addition to the power of its FMS, the Pro Line 21 also offers not only GNSS and VOR navigation functions, but also backup position information from up to three VOR/DME ground stations automatically during flight. In the scenario when you may lose GPS signal, or our military selectively degrades the signal, the pilot still has backup

navigation that will automatically attempt to provide your position. This power is also present in the Pro Line Fusion equipment.

With ADS-B requirements rapidly approaching, operators of all aircraft are evaluating their upgrade options. One of the selling points of the Pro Line Fusion upgrade program is the new system includes WAAS (not installed in all Pro Line 21 aircraft) and ADS-B Out. Owners can upgrade to the latest avionics and become ADS-B out compliant at the same time.

At one time, Cessna offered an upgrade on the CJ2+, also a Pro Line 21 platform, to the Garmin 3000. To date Cessna has only installed one system in a CJ2+ and does not have currently have upgrade path for the CJ3's to the latest Garmin system, unless the owner purchases a new CJ3+.

With more than 400 Citation CJ3 aircraft produced since 2004, the market is a great platform for the upgrade. In addition, since other aircraft utilized the same Pro Line 21 platform, including other Citations, Bombardier Challengers among them, the potential sales numbers look even more promising.

Rockwell Collins used the King Air Fusion system as the basis for the CJ3, enabling them to complete the entire certification process in just under one year. A friend of mine loaned his CJ3 to Duncan Aviation (in Lincoln, Nebraska and Rockwell Collins, to be the test bed for the STC. Duncan Aviation, working with BHE & Associates, Rockwell Collin and Textron Aviation, had the system operational for test flights in six months. It took a few more for test flights and certification.

The Fusion cockpit consists of three touch-enabled displays, called AFDs (Active Flight Display), two CCPs (Cursor Control Panel) and one MKP (Multifunction Keyboard Panel). In addition to these primary components, there are dedicated controls for barometric setting, radar operation and autopilot controls. Pro Line Fusion also uses some of the same Pro Line 21 remote mounted components located in the nose compartment. Since most CJ3s also had a Garmin GNS 500 as the second FMS, that unit is removed during the upgrade.

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The PFDs have “hot zones” where touch is enabled. If the pilot forgets which areas are sensitive to touch, they simply touch the screen and those zones are highlighted.



Rich Pickett Photos

Flight Planning is one of the many areas where the Pro Line Fusion excels, offering both a planning page (Plan) and detail page (Fly).

The AFDs are able to act as a PFD or MFD, similar in concept as other avionics such as the Garmin 1000 or 3000/5000 series. This cross-functionality greatly eases the capability for reversion modes when one of the displays fails for any reason. The unique combination of touch screens and dedicated controls (which can operate the entire system without touch) sets this system apart for others.

The PFDs have “hot zones” where touch is enabled. If the pilot forgets which areas are sensitive to touch, they simply touch the screen and those zones are highlighted. For example, if the pilot wants to input V speeds they touch the airspeed tape. If the pilot wants to split the screen to show other information, they touch the “gear,” icon which provides access to a number of functions. In keeping with Rockwell Collins’ philosophy, there are also multiple methods to complete these functions.

The MFD is one of the most versatile displays in aviation. In addition to splitting the screen into multiple panels, the pilots can control the display through dedicated buttons on the MKP (keyboard), offering quick access to FMS, MAP, CHART and other features. This allows the pilot to quickly change the display to match their needs.

One of the unique features of the system is the ability to store eight

display profiles for quick access using the MEM key on the MKP. Two memories (User A and User B) can be set by the pilot and the remaining by an avionics facility. Profiles include: Emergency, Taxi, Takeoff, Cruise, Descent, Approach and two user settings.

In keeping with the power of touch, pilots can easily access flight functions by touching the screens. Whether it is loading a flight plan through the FMS panel, or setting their weights and performance in the setup screen, you have complete control. In addition to setting these values you can also simply touch the appropriate icon on the screen. If you have a crossing restriction at a fix, touch the waypoint on the FMS (either Flight or Fly pages) or touch the waypoint on the screen. The pilots are presented with a simple menu to do all flight operations associated with the point.

Flight Planning

Flight Planning is one of the many areas where the Pro Line Fusion excels, offering both a planning page (Plan) and detail page (Fly). Pro Line 21 also has these functions, which are named Flight Plan and Legs, respectively. Airways are entered through the Plan page, with generally the Fly page used for the detail. Easy to read and use, the Fly page is the one I use the most. If you have a crossing restriction, just touch

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the area to the right of the waypoint and a submenu appears giving you a number of options for that fix.

Wireless Communication

Rockwell Collins, with their acquisition of ARINC, now has an iPad app: ARINC Direct is designed to complement and communicate with Pro Line Fusion. It has robust flight-planning capabilities, as well as performance calculations utilizing APG (Advanced Performance Group) data for optimized departures. Pilots will be able to stream flight plans and performance data to the Fusion panel systems using the included Wi-Fi system module currently dedicated to these communications. My initial experience with the app, and the associated website, reveal it to be extremely robust.

Upgrade Process

Duncan Aviation did the initial installation for the STC and now Textron Aviation has joined them

in offering upgrades. The price of the upgrade is approximately \$325,000, plus options such as a second GPS sensor, CPLDC (Controller Pilot Data Communications) and other features.

Operators can expect their airplane to be down for four to six weeks for the complete installation. Some owners are taking advantage of the scheduled down time to do other maintenance, or paint and interior upgrades.

The Future

Our airplanes are becoming technology platforms, and we are dependent upon the equipment manufacturers to keep us current and functional. This upgrade offers the operators confidence that their airplanes can incorporate new functions over time, especially since the Fusion platform is a strategic direction for Rockwell Collins. Rockwell Collins has also started the certification of the Fusion system in the Bombardier Challenger 604

with an expected completion date of summer 2018.

The pending acquisition of Rockwell Collins by United Technologies (UTC) should not change that plan. In fact, they are retaining the Collins name known by pilots for years: The division will now be named Collins Aerospace. **T&T**

Since receiving his private pilot's license in 1977, Rich Pickett's passion for flight has only intensified. President of Personal Wings, Inc., Rich is the former chief information officer for San Diego State University. With more than 10,000 hours in the logbook he holds ATP, CFII SMEL, AIGI, commercial SES and glider ratings. His type ratings include Citation 500, 510S, 525S, Eclipse 500S, the Aero Vodochody L-39 and L-29, and SIC on the DA-10. He serves on the NBAA Citation Technical Advisory Committee.



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Citation-ology

New iOS App Available for Reviewing Citation Systems & Memory Items

by **Dianne White**

Aeromania has introduced an app to study Citation systems, limitations, and memory items on your iPhone or iPad. Called **Citation-ology**, the app is available via iTunes on the App Store.

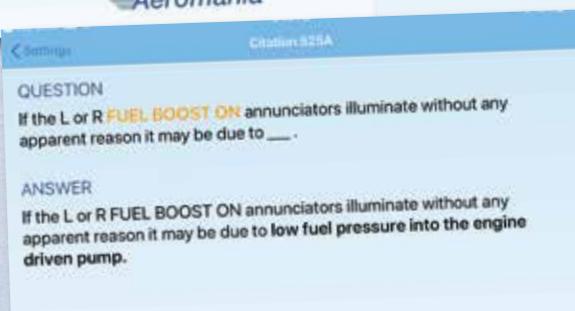
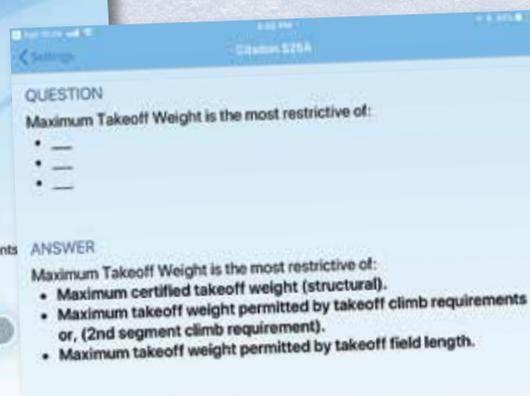
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Twin Provicency

by Thomas P. Turner



Avoiding Fuel Trouble

From an Australian Transport Safety Bureau (ATSB) report:

The pilot of a Beech Baron 58 aircraft contacted a refueler and requested 400 liters (about 105 U.S. gallons) of fuel be added to the aircraft. The refueller provided 200 liters of fuel, however the refueller recorded the amount provided as 400 liters.

At the end of the day, the refueller totaled the daily fuel delivery quantities and detected a 200-liter discrepancy between the recorded deliveries and the fuel tank meter readings. The refueller identified that the discrepancy was due to an error in the refueling of the Baron in question. He immediately went to the aircraft to notify the pilot of the error. However, he was not able to locate the pilot. The refueler was then distracted by a phone call and forgot about the refueling error.

Eleven days later, another pilot prepared to conduct a ferry flight in the aircraft. The take-off and climb were uneventful. About 5 nm north of the planned destination, both engines failed. The pilot conducted a forced landing in a paddock (pasture). During the landing roll the aircraft impacted a number of bushes. The pilot was not injured, however, the aircraft sustained substantial damage.

This incident underlines the importance of communication once an error has been discovered. The refueling error was discovered 11 days prior to the incident flight, however, this was not communicated to the Baron's operator or its pilots. Knowledge of the error would have enabled the pilots to correct the fuel log and avoid the incident.

And from the National Transportation Safety Board:

The pilot of a Piper Seneca departed in night instrument meteorological conditions with the airplane's fuel tanks full, providing an estimated fuel endurance of four hours 50 minutes. Two hours 50 minutes into the flight, the pilot reported a loss of engine power on the right engine, followed by a loss of engine power on the left engine. The pilot attempted to land at a nearby airport; however, the airplane impacted trees about 8 miles short of the airport. A review of weather information revealed no evidence of in-flight icing or other weather conditions that may have contributed to the accident.

The left engine fuel selector valve was found in the "X-FEED" (crossfeed) position. The right engine fuel selector was in the "ON" position. With the valves in these positions, both the left and right engines would have consumed fuel from the right fuel tank. Review of performance charts and fueling records indicated that if the flight was conducted with the valves in the as-found positions, exhaustion of the fuel in the airplane's right fuel tank would have occurred about the time the pilot reported the dual engine failure. In addition, the yaw trim was found in the full nose-right position. It is possible that the pilot used nose-right yaw trim to counteract an increasing left-turning tendency during the flight as fuel was burned from only the right wing's fuel tank making it relatively lighter than the left wing.

According to the checklist in the Seneca Pilot's Operating Handbook, during taxi the pilot was to move each fuel selector to "X-FEED" for a short time,

"Almost half of pilots involved in fuel management accidents hold either a Commercial or Air Transport Pilot certificate."





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Fuel awareness requires you to use several independent means to judge fuel state. When possible be present for the refueling to verify the amount added.

while the other selector was in the "ON" position, before returning both fuel selectors to the "ON" position before takeoff. According to a checklist found in the airplane, the fuel selectors were to be set to "X-FEED" during taxi and then to "ON" during engine run-up. GPS data recovered from onboard devices indicated that the pilot taxied from the ramp and onto the active runway without stopping in about three minutes, indicating that it is unlikely he performed a complete run-up of both engines before takeoff. He likely failed to return the left engine fuel selector from the "X-FEED" to the "ON" position, where it remained throughout the flight and resulted in fuel starvation and a loss of engine power on both engines.

Focus on Fuel

The NTSB continues to identify fuel mismanagement as a common factor in airplane accidents. Lest pilots of twin and turbine airplanes feel complacent, in its recent Safety Alert 67: Flying on Empty (August 2017), the NTSB notes:

- Almost half of pilots involved in fuel management accidents hold either a Commercial or Air Transport Pilot certificate (48 percent);
- Pilots holding Private or Sport Pilot certificates make up 50 percent of those who have had fuel mismanagement events;
- Only 2 percent of fuel-related mishaps involved student pilots.

Fuel exhaustion (running completely out of fuel) and fuel starvation (having fuel onboard that doesn't reach the engine because of improperly set selectors, a blockage or water contamination) were implicated in an average of more than 50 accidents per year since 2010, according to the NTSB. Fuel exhaustion accounted for a little more than half (56 percent), while fuel starvation resulted in 35 percent of the crashes.

"An overwhelming majority of investigations of fuel management accidents – 95 percent – cited personnel issues (such as use of equipment, planning, or experience in the type of aircraft being flown) as causal or contributing to fuel exhaustion or starvation accidents. Prudent pilot action can eliminate these issues. Less than 5 percent of investigations cited a failure or malfunction of the fuel system."

Fuel Awareness

Most multi-engine airplanes are low-wing types with a fair amount of dihedral. Because of the dihedral "slope" of the wing, fuel filler ports are at the outboard, high-end of fuel tanks. Consequently, in many airplane types there may be no fuel

visible at all through the filler ports when there is still significant fuel remaining in the tank. In other words, determining the amount of fuel on board must include ways to accurately detect and track less-than-full fuel levels that are independent of visual inspection.

Fuel awareness requires you use several independent means to judge fuel state. Pilots make totalizer data entry errors. Ground handlers make fueling errors or sometimes forget to add fuel altogether. Fuel burn may vary from flight to flight. And aircraft fuel gauges are sometimes inaccurate. Where fuel is concerned, you need to be uncompromising and skeptical.

There are many independent ways to check and track fuel state:

- A visual check of fuel level in the tanks;
- The indications on cockpit fuel gauges;
- Wing-mounted fuel sight gauges, when installed;
- The "fuel remaining" amount on a fuel totalizer;
- The amount of fuel you personally put into the tanks, or watch being added prior to the flight;
- Fuel records, compared to the engine tach time or airplane Hobbs time when the fuel was last added.

Fuel totalizers are among the best safety devices on an aircraft. But their information is only as good as the accuracy of the pilot's inputs. If you've ever delayed or forgotten to input fuel load, or have entered "approximate" data, all those little errors can eventually add up. It's best to routinely top the tanks and reset the totalizer at "full" to avoid creeping inaccuracies in the fuel-remaining data.

Not all methods work for all airplane types or all fuel levels. The trick is to look for discrepancies between one or more available method and the others. If any one indication differs noticeably from the others, the only means to resolve the discrepancy is to add fuel until it is at a level known to be sufficient to complete the flight with reserves. This fuel status technique is especially helpful if the flight requires a less-than-full fuel load for weight and balance purposes or for improved performance.

This is even more critical when more than one pilot flies the airplane. For several years I flew and managed two Beech Barons for a company in Tennessee. I generally flew one, and the company CEO flew the other. At times, however, we would swap, sometimes with little notice. We adopted a policy to check the fuel level using every possible way from the list above. If any one indication differed noticeably from the others, we would suspect them all, and add enough fuel to either:

1. be able to visually confirm the fuel level in the tanks, or;
2. complete the planned flight with the fuel we put in the airplane at that time (most of our trips were short, about an hour plus reserves).

With that operating philosophy, we never departed with concern about the amount of fuel on board.

Inflight Monitoring

Once airborne, monitor fuel state and crosscheck expectations against actual fuel burn as you progress along your route. Different power and mixture settings, or slower-than-planned ground speed, will affect your fuel reserves. Don't forget to occasionally check fuel caps and the trailing edge of the wing behind fuel caps and vents for any signs of fuel venting overboard in flight. I added a step to my "climb checklist" to remind me to check behind fuel caps and along the trailing edge of the wing for any sign of fuel leaks. If fuel is venting, land at the nearest airport, correct the source of the fuel leak if possible (secure the caps), and add fuel until you can confirm you have enough to make it to destination with reserves.

Don't dismiss a fuel gauge showing a fuel level lower than you'd expect. It may be telling the truth. Conversely, some inflight venting scenarios will cause cockpit gauges to read fuller than actual. You might have to land early to double-check the fuel load if a discrepancy arises between indicated fuel level and your flight planning expectations.

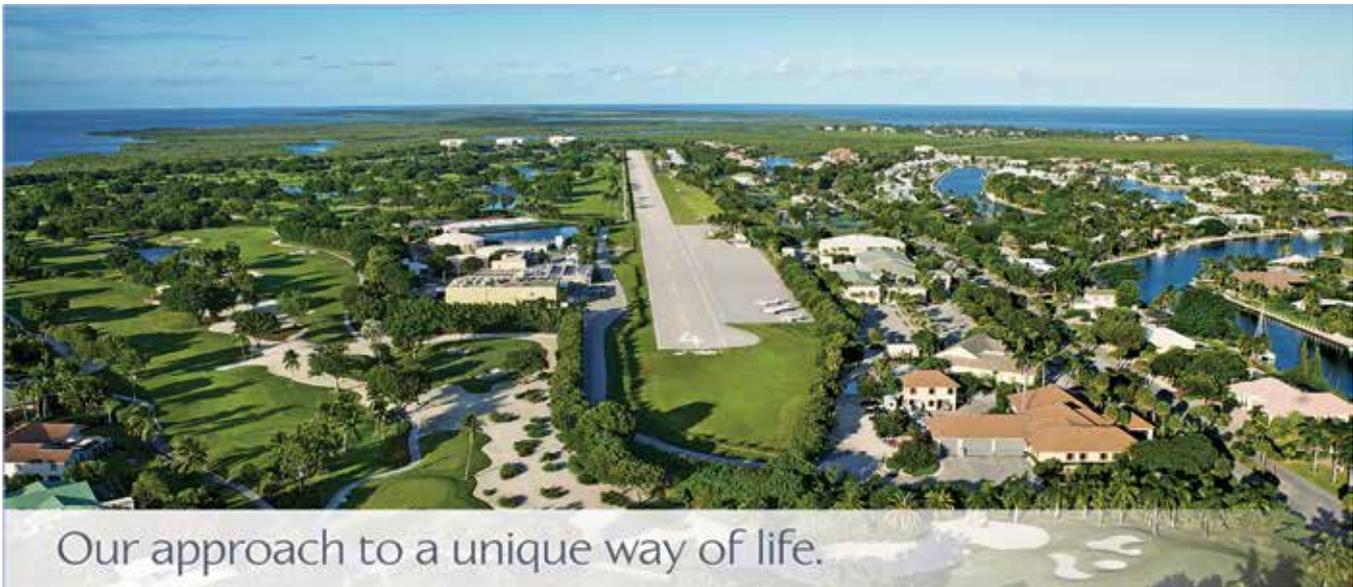
Fuel status tracking is even more important if you're flying an airplane with multiple, independently selectable fuel tanks. Some twins, especially older ones, have a fuel return that may or may not go to the tank in use. This can create a situation where fuel may be wasted overboard through the vents if the return-fuel tank is over-filled. If you need to move the fuel selector, you need to actively monitor fuel state for each tank individually.

How could the Baron and Seneca pilots – and the many more each year – avoid fuel mismanagement accidents?

- Personally watch the airplane when it is fueled;
- Crosscheck fuel level by all means that are possible;
- Follow before takeoff and inflight checklists meticulously;
- Predict "fuel used" and "fuel remaining" levels at waypoints along your route of flight, and crosscheck to see that you are meeting or exceeding estimates for fuel remaining as you pass each;
- If you have individually selectable fuel tanks for each engine, before takeoff make a written plan of when and where you will change tank selection, and follow that plan in flight;
- Don't rely on a single method of deciding there's enough fuel on board to begin or complete a trip;
- Divert early, divert often if you have any doubt about your ability to arrive with a healthy fuel reserve.

Aircraft crashes are especially tragic when they are the result of pilot-induced engine failure. Manage and monitor to avoid fuel trouble. 

Thomas P. Turner is an ATP CFII/MEI, holds a master's Degree in Aviation Safety, and was the 2010 National FAA Safety Team Representative of the Year. Subscribe to Tom's free FLYING LESSONS Weekly e-newsletter at www.mastery-flight-training.com.



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A U T H E N T I C • P R I V A T E • U N I Q U E



FIVE *on the* FLY

WHO:

Charlie Precourt

Colonel, USAF, Ret.

NASA Astronaut (former)

Four Space Shuttle Missions

Shuttle Commander (STS-84 & STS-91)

by Rebecca Groom Jacobs

HOMEBASE:

Salt Lake City,
Utah

POSITIONS:

VP and GM,
Propulsion
Systems Orbital
ATK

Chairman,
EAA Safety
Committee

Chairman,
Citation Jet Pilot
Safety Committee

RATINGS:

Instrument,
Commercial,
Multi-Engine,
CFI, Various
Experimental
Authorizations

HOURS:

11,000+

1. *Many of your contributions to general aviation center on safety education and improving best practices within the pilot community. How did this become a passion?*

When I stopped flying professionally, I wanted to continue to fly for my own enjoyment, which exposed me to opportunities in general aviation, my first involvement being with EAA. Paul Poberezny, who I had developed a relationship with during my NASA days, requested my help in improving the safety record across the experimental/homebuilt communities. I happily agreed and started running EAA's safety committee and have helped with initiatives such as the "additional pilot program." Since it was initiated three years ago, there has not been a single accident in the first 10 hours of homebuilt flying for those who elect to use the program. What I am trying to do is bring what I learned as best practices in DOD and NASA flying to the GA community.

2. *What central areas should the general aviation industry be focused on?*

The single largest distinction of GA compared to other flying is you are generally speaking to a single-pilot operation. That leads to the key question: How do we enable the single pilot to be just as safe as a crew? There is still work to be done in finding the equivalent tools and resources for the single pilot that crew resource management (CRM) has done so successfully. One option is improving upon standard practices. In the professional flight community, there are clear procedures for every flight phase/objective, which pilots will perform the same way every time. Whereas, lot of GA pilots do things a little differently each time. There needs to be a set of best practices and techniques that are followed and accepted across all GA flying.

3. *You flew four space shuttle missions during your 15-year tenure at NASA. Can you discuss how your experience at NASA equipped you for your subsequent roles in general aviation?*

At NASA, the thing to recognize is the space shuttle was the riskiest flying machine you can contemplate. Seven million pounds of thrust lifting 5 million pounds of vehicle vertically off the ground, accelerating in 8 minutes to Mach 25 – and then reversing that in entry. The stated odds of catastrophic failure were somewhere around 1 in 200 flights. So, the entire NASA team was constantly fighting against those odds with every mission. Ultimately, there are four ways to limit risks – eliminate (change a design), transfer (place it somewhere else), mitigate (reduce

the likelihood) or just accept (and manage it). That kind of learning is what I am trying to bring to GA.

4. What advice would you provide a non-professional pilot to improve their personal safety standards?

Commit to training and continuous learning. A lot of the GA community has an aversion to training and being evaluated. We need to strive toward training becoming more valued and even desired. The increased knowledge and practice will ultimately make flying more enjoyable. I'd also advise pilots to become a member of their airplane's type club, read blogs, participate in FAA webinars, read magazines like *Twin & Turbine*. Learning from others and their experiences is invaluable. When I was a flight student in the Air Force, there were 15 students and 8 instructors in an open-bay classroom. I would actually eavesdrop on pre-briefings and debriefings of other students and learn from their scenarios before I ever ran into them myself.

5. Now in its third year, the EAA Founder's Innovation Prize is propelling practical solutions to real issues. As a judge, why do you feel this an important approach to improving safety?

The single biggest contributor to fatal accidents in GA is loss of control. Commonly, scenarios where pilots should have been able to get the airplane on the ground but were unprepared or distracted. So, while creating programs like the additional pilot program, another tool we decided to introduce was this Innovation Prize, dedicated to Paul. The idea is to tap into the innovative thinking that already occurs throughout the experimental aircraft community and motivate members to draw up their own solutions to the problem. You never know where a breakthrough might come from, and we felt it was important to open up the floor to members themselves. Already, it's been a greatly beneficial in raising awareness of the issue and sparking discussion and ideas. **T&T**

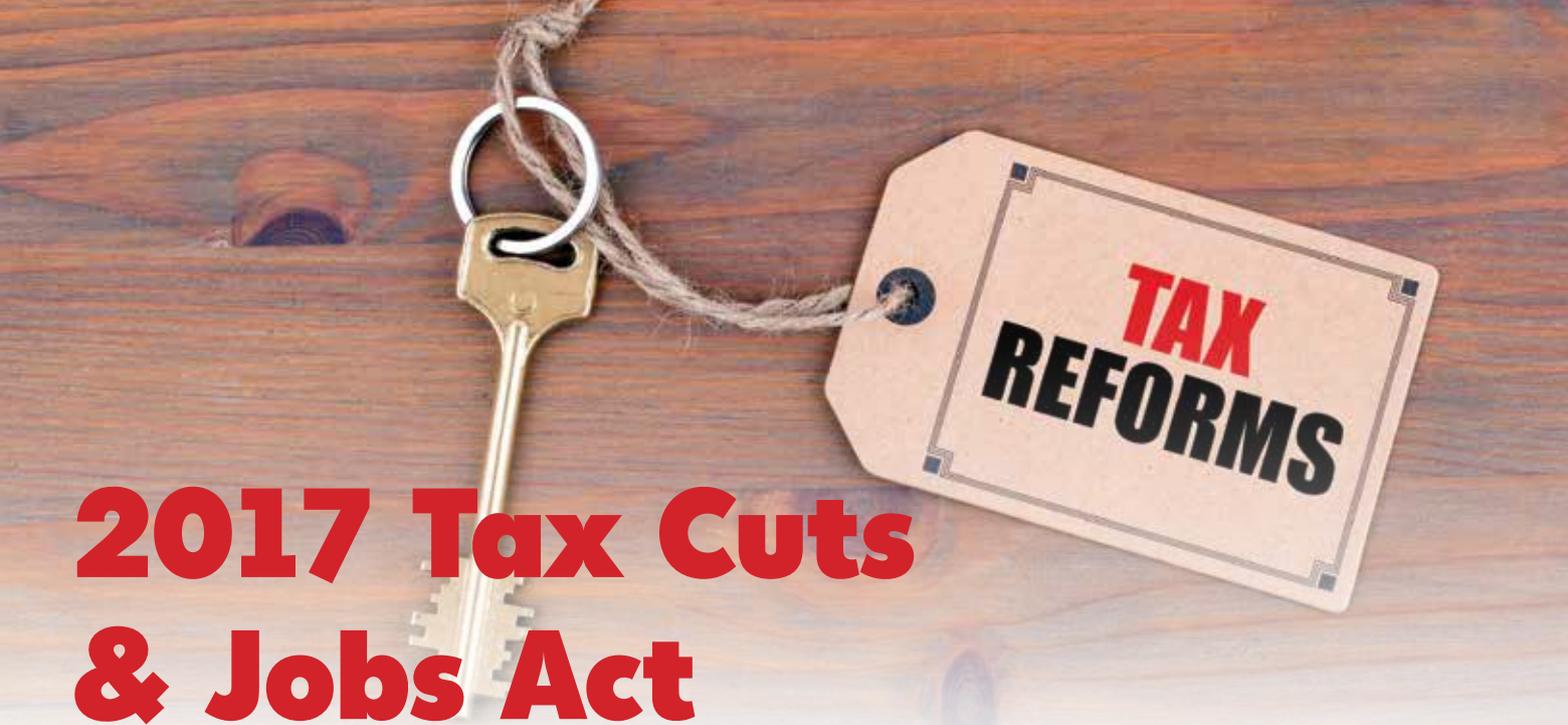
Rebecca Groom Jacobs can be contacted at rebecca@groomaviation.com.



Precourt at the commander's station of the Space Shuttle Discovery's flight deck during NASA's scheduled final rendezvous operations with Russia's Mir space station.

Two mission commanders (Charlie Precourt and Vasili V. Tsibliyev) shake hands moments after hatch-opening on docking day of the Space Shuttle Atlantis and Russia's Mir Space Station.





2017 Tax Cuts & Jobs Act

How the New Law Impacts Business Aviation.

by Suzanne Meinters-Levy

After years of debate, tax reform has arrived. The late-year 2017 passage and signing of the Tax Cuts and Jobs Act (TCJA) has reshaped the business and individual tax landscape. The TCJA provides excellent tax opportunities for businesses of all sizes to invest in general aviation aircraft but requires careful planning and review to ensure that deductions are preserved. Below you will find a few highlights of the new law, along with discussion points to consider with a trusted advisor.

Full Equipment Expensing for Eligible Aircraft Purchases, New and Pre-Owned

Perhaps most notably, the TCJA revised the bonus depreciation provisions pursuant to Section 26 U.S.C §168(k) of the Internal Revenue Code to allow for 100 percent bonus depreciation for qualifying new and pre-owned aircraft purchased and placed in service after Sept. 27, 2017, gradually phasing down beginning in 2023. This is a historic shift of an incentive that has usually only applied to factory new purchases.

Additionally, Section 179 expensing elections have increased substantially, allowing additional first-year write-offs for equipment and component parts placed in service. This makes 2018 an attractive time to add to your fleet or change aircraft, or alternatively to replace or upgrade major components of your business aircraft. In order to use bonus depreciation, the equipment must be used at least 25 percent of the time for qualified business use (a term of art that must be closely evaluated by each taxpayer) and at least 51 percent of the time for total business use.

Elimination of 1031 Exchanges for Equipment

The TCJA has eliminated the 1031 exchange for tangible personal property, a tool commonly used by owners replacing their business aircraft to avoid the impact of depreciation recapture when an aircraft is being sold only to be replaced by another business aircraft. For exchanges already in process before year-end 2017, TCJA allows the completion of the exchange provided the relinquished aircraft was sold (or, in the case of a reverse exchange, the replacement aircraft was acquired) before year-end. While the elimination of 1031 exchanges is a disappointment for the industry, the expansion of deductions available under the revised 168(k) and Section 179

will significantly soften the blow for most business aircraft operators replacing their business aircraft within the tax year.

Clarification of No Excise Tax for Part 91 Flights Pursuant to a Management Agreement

Thankfully, the TCJA puts to bed a topic of ongoing controversy with respect to aircraft managed by Part 91 management companies. Prior to 2012, the longstanding rule had been that an aircraft owner/lessee making payments to a Part 91 management company for the care and operation of the aircraft was not creating a commercial-transportation arrangement and, therefore, did not trigger the air-transportation excise tax (FET).

In 2012, the IRS upended this understanding with a contrary interpretation, which posed an existential threat to the Part 91 management industry. Numerous audits ensued, many of which have now been held in stasis for years as the IRS re-evaluates its policy. The TCJA makes clear that, at least going forward, these Part 91 management fees will not be subject to FET. Further, it is expected that the IRS is now unlikely to assess tax on these arrangements for earlier periods.

Adjustments to Deductibility of Flights

Along with the new tax incentives and clarifications came the loss of several deductions commonly taken in our industry. Travel connected to business entertainment is no longer deductible starting in 2018. These trips arguably fall under the same disallowance formula and methodology provided by 26 C.F.R. 274-10, the regulation that addresses entertainment use of aircraft. 274-10 provides that all expenses associated with the aircraft, including tax depreciation and other fixed costs, must be disallowed per passenger seat in the event of entertainment use. Accordingly, the economic impact of this adjustment will be significant for taxpayers that use the business aircraft for business entertainment trips.

Additionally, the TCJA adds a new subsection to Section 274 (26 U.S.C. § 274 (1)), that provides that commuting flights provided to employees on company aircraft are no longer deductible trips at the company level. While commuting has never been considered a business expense, many commuting trips have previously remained deductible at the company level if they were provided as compensation to the employee.

The continued availability of this fringe deduction at the company level appears significantly restricted under the new law when a business aircraft is being used for travel between home and work. If your company aircraft is used for commuting trips, speaking with a tax lawyer about their on-going deductibility is prudent as you plan usage moving forward.

Tax Rate Changes for C-Corporations & Deductions for Pass-Through Entities

Finally, the provisions that may most significantly impact the structuring of business aircraft acquisitions and operations are not industry specific; they impact all business practices for U.S. taxpayers. Corporate tax rates have been substantially reduced to 21 percent, and for some pass-through businesses, there is a newly available deduction for up to 20 percent of the income generated.

The pass-through income reduction, which has the potential to provide substantial tax relief on aircraft recapture income and other business revenues, is very complex and requires a close analysis of the company type, income level, wages paid, and the assets held by the entity. Standard industry practice must adjust to the new reality that business entities will be subject to different rates and that owners and operators may need to adjust expense allocations to ensure that the tax liability is minimized where appropriate and properly determined. Changes to the treatment of carryforward losses and interest deductions may also impact business planning.

The Time is Now

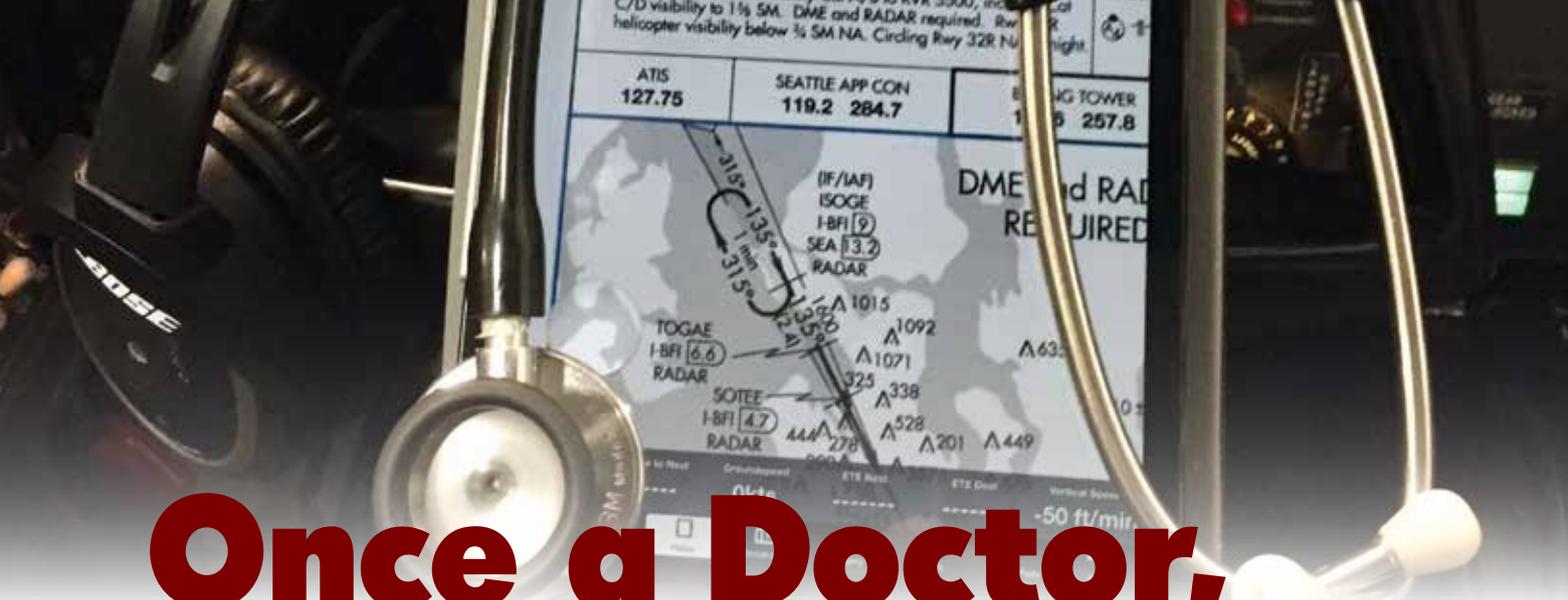
Tax reform is exciting, and the impact of the TCJA should be to strengthen investment in aircraft and aviation equipment. There is reason to believe that uncertainty regarding reform has left many potential aircraft buyers on the sidelines waiting for clarity in years prior. With strong pre-owned inventory and many new aircraft models available for business investment and use, 2018 is forecasted to be a robust year for the industry.

Whether you are considering a purchase or you are already operating a business aircraft but want to ensure that your deductions are preserved, it is critical to work with an aviation tax lawyer to help you navigate the many opportunities that await. The time is now. **T&T**

Suzanne Meiners-Levy is a Partner and the Pro Bono Coordinator at Advocate Consulting Legal Group, PLLC (ACLG). ACLG is a boutique legal practice, employing more than lawyers, CPAs, accountants and para-professionals to exclusively serve the legal and tax planning needs of the general aviation aircraft owners

and operators. Suzanne has been certified as an aircraft leasing expert witness in both state and federal courts, and is a member of the Bar in Florida, Texas, Tennessee, New York, and the United States Tax Court. She is a sought-after public speaker on tax matters, presenting at a range of aviation professional events. Suzanne graduated summa cum laude from Vanderbilt University and magna cum laude and Order of the Coif from NYU School of Law





Once a Doctor, Always a Doctor

by Kevin Ware

Due to the somewhat insecure nature of the business, many pilots who fly airplanes for a living also have a backup career. When those secondary skills are called for while aloft, it can make for some novel deviations from regular pilot duties. In my case, being a doctor with an emergency medicine background has from time to time added to the interest of the trips I fly as a pilot professionally. A couple trips over the past year or so to Alaska and Europe are cases in point.

Fellow corporate jet pilot Doug and I leave Skagit Regional Airport just north of Seattle in the Lear 35 just before dawn. It is a cold winter morning, and we have seven passengers on board the business jet with the plan to leave three in Ketchikan, two in Juneau, and take the remaining two to Valdez. We are to wait there for a couple of hours, then reverse the whole procedure, ideally getting everyone back to Seattle by dinner time.

A small arc of the sun is visible on the eastern horizon as we start down from FL360 near Annette Island, about 70 nm southeast of Ketchikan. The weather report says it is snowing in Ketchikan with visibility of one to 2 miles, scattered clouds at 2,000, broken at 2,500 and overcast at 3,000. The wind is from the west gusting 12 to 20 knots. Anchorage Center clears us for the instrument approach to Runway 29, and hands us off to the local frequency. Ketchikan Flight Service tells us there is snow on the runway, and braking action is unknown. We break out of the clouds at 2,500 feet about 2 miles from the runway, to see that at 144 knots we are a bit high and fast. This is not where we want to be given the runway conditions.

The power comes all the way back, full flaps go down and pretty soon we are nicely established on the glide path, doing the calculated correct speed of 132 knots. We make a smooth landing in blowing snow, the thrust reversers are deployed, and I tentatively test the brakes. They seem OK, although hard to tell with all the deceleration generated by the jet engines.

An Alaska Airlines 737 crew behind us on the same approach asks about braking. We are nearing the end of the runway and nail the brakes to see what happens. Good braking, we tell them. It is pretty clear their concern, (like ours) was not the instrument approach so much as rather what was going to happen once on the airplane was on the ground.

When we exit the taxiway and enter the Aero Services ramp, the Learjet nearly comes to a crunching stop. No one has plowed the ramp and the Lear's high pressure, small diameter tires

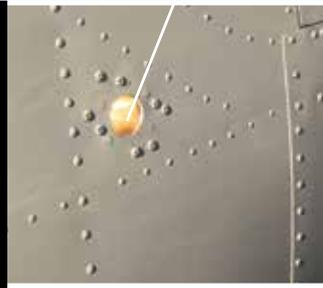
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have trouble getting through six to 8 inches of thick, wet snow. We power way up just to keep the airplane rolling and with some difficulty reach the lineman who is energetically waving us forward.

Doug and I are working our way through the airplane's 14-item shutdown checklist, when one of the passengers pokes his head in the cockpit and ask if he can open the door. With my headset still on, I nod "yes" and return to the checklist. Through the pilot's window, however, I see that as the first man out the door reaches the ground, his feet slide forward and he loses his balance. He starts a slow-motion fall on what is a sheet of ice covered with snow.

As his right arm moves backward to break his fall, my pilot brain goes quiet and the doctor one kicks in with an unsolicited stream of diagnostic considerations. I first think, "He must be right handed." I then see his right hand extend at the wrist, and I think, "Young guy and his protective reflexes are working pretty good."

But I also think, "Hmm...right hand extended at the wrist, probable Colles fracture or a fractured scaphoid (a small bone in the wrist) coming up here...or both...and on the dominant side...this guy does construction work... not good. I hope his arm takes the damage, not his head. What would we do about a subarachnoid hemorrhage here in Ketchikan anyway. That would be bad, a subdural hematoma would be better, we would have him back in Seattle by the time that showed up."

He catches the worst of the fall with his right arm, bends at the waist and as his gluteal muscles suffer a pretty good impact with the ground. I think, "I hope the snow gives enough cushion so his does not fracture his coccyx...those really hurt."

Now in full ER doctor mode I am loosening my five-point pilot seat belt harness and heading for the airplane's door. But before I can get there, he gets up, shakes his wrist a bit, rubs the snow off his pants and heads into the terminal.

Fifteen minutes later, I have my "pilot" hat back on and am getting some coffee in the pilot's lounge. One of his buddies, having heard somehow that their jet pilot is also a doctor, asks if I wouldn't mind looking at his arm. With seven guys looking on, I have him take off his shirt and conduct an exam specific to the arm. I see his distal circulation is good, the radius and ulnar are both anatomically aligned, there is no point tenderness over the anatomical snuff box or over the distal radius and ulna.

But I also remember that sometimes you can get an elbow injury or shoulder dislocation with that type of fall. So now in "full-on" doctor mode, I say, "Hmm," nodding my head slightly, continue my exam proximally all the way to his chest wall. My seven-man audience is confused.

When finished, I nod a bit more and then say his exam appears normal. I recommend a follow-up X-ray because based upon exam alone, I cannot exclude a wrist fracture. Yes, corporate jet pilot or not, I am still indeed a doctor, and apparently acting just like they expect one to.

My passenger/patient says, "Thanks doc," and the entourage file out of my "examining room/pilots lounge," making respectful and grateful gestures.

Shortness of Breath Over the Atlantic

A couple of months go by and I am on another trip, this time over the Eastern Atlantic between Iceland and the Outer Hebrides at FL410. I am working as the co-pilot on a flight that started in Vancouver the day before and will end in London in the evening. The airplane is an almost-new CitationJet and we have an hour to go at 400 knots before reaching landfall. Fred, the pilot in the left seat, and I are making small talk between position reports to the Oceanic Controller, when one of the passengers comes forward and with slightly slurred speech says she is dizzy and doesn't feel well.

Fred and I both check the cabin altitude meter just above my right knee on the instrument panel. It says 8,000 feet, which is normal when the airplane is this high, and well tolerated by most healthy passengers. We tell her the cabin altitude is just fine, and she should return to her seat. We both watch as she gets about halfway back into the cabin, then falls in the aisle and stops moving.

I retrieve the portable oxygen bottle and mask and head back. As I approach her on the floor with oxygen bottle in hand, the doctor part of my mind starts waking up, and I get another stream of diagnostic observations and thoughts. I see a normal height and weight female in her 40s. She has an anxious and frightened facial appearance, pink fingernails and lips, and a respiratory rate I estimate to be about 20. As my right hand shakes her shoulder and I ask, "Are you OK," my left hand finds her wrist and a pulse of 90 or so.

She mumbles she cannot feel her fingers and her lips are tingling. I think, "Not hypoxia...more likely too much oxygen and not enough CO₂, probably with some respiratory alkalosis thrown in...looks like hyperventilation syndrome to me." I wish for a blood gas machine to confirm my working diagnosis.

While the other passengers look on with worried expressions, and with some difficulty in the narrow space available, I get my passenger, (now patient) in a recovery position, put aside the oxygen bottle and search through the CJ's small galley looking for a paper bag. I find a small plastic one, return to my passenger (now patient) and in my best ER doctor's voice say, "I want you to breath into the bag for five minutes, at which time I am confident you will much feel better."

The time goes by, and then in a somewhat surprised voice she smiles a little and says her fingers and lips now feel OK. Ten minutes later I have her belted into her seat and between tears she starts telling me how stressful the previous several days had been, and how anxious she had been feeling. After ensuring she is comfortable, I then go back to being a pilot and return to the front of the airplane.

I am putting the pilot's seat belt harness and headset back on just as we cross over the Hebrides and are cleared directly to Manchester, England by a radar controller with a distinct Scottish accent. A half-hour later we descend out of the clouds on an instrument approach into London's Stansted Airport and see the green fields and stone fences of England beneath us.

For some reason, the tower controller has the runway lights turned up high, in spite of the fact it is still day time. We land

without a problem and taxi to Harrods Aviation, the business aviation terminal. I head back to open the door, and our female passenger (patient) gives me an appreciative look and silently mouths, "Thank you, doc."

In contrast to that greeting, as the door opens, Her Majesty's customs agent is standing on the ramp. He sees my uniform shirt with four stripes and he says, "Welcome to England, captain."

Fred (who is a fully qualified engineer) and I are finishing our post-flight pilot duties when he suddenly stops and says, "You know Kevin, I guess once you are a doctor, you're always a doctor, aren't you?"

I answer, "I guess so, but I also think that "once a pilot, always a pilot" is also true. Activities like engineering, medicine and flying take a lot of effort to learn well, and with time they just become who you are. 

Kevin Ware is an ATP who also holds CFI, MEII and helicopter ratings, has more than 10,000 hours and is typed in several different business jets. He has been flying for a living on and off since he was 20, and currently works as a contract pilot for various corporations in the Seattle area. When not working as a pilot he is employed part time as an emergency and urgent care physician. He can be reached at kevin.ware2@aol.com.

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From the Flight Deck

by Kevin R. Dingman



Vascular Time Bomb

A pilot's blood pressure, hypertension and the FAA Form 8500-9

Vascular [adjective] Latin: Hollow container; a vessel or vessels, especially those that carry blood.

Time Bomb: [noun] A potentially detrimental, dangerous or catastrophic delayed reaction.

They say many people don't realize that they have high blood pressure. This isn't true for us pilots because we get it checked all the time. We should know ours. What we may not know, however, is what BP reading is "too" high. After a half-century of uneventful civilian and military flight physicals, about a year ago my blood pressure inexplicably started to climb.

But why fret? High BP is simply caused by stress and we can control stress, right? After all, we're *Twin & Turbine* pilots: steely eyed, cool, calm and collected. Poised and unflappable. Fighter pilots, astronauts, airline pilots, physicians, attorneys, business moguls, authors, artists, stock brokers and engineers. We eat stress for breakfast. And we don't notice the strain because we tactfully handle stress like a dog: if we can't eat it, play with it, or fix it, we pee on it and walk away.

We Could Die...or Worse

Blood pressure was never an issue in past flight physicals, so my first "recheck" at 153/91 was a wake-up call. It turns out that BP is influenced by different things for different folks. And for any one individual, the things that had no influence in the past may have an influence as we age. BP is something that we must actively monitor and if necessary, modify any contributory behaviors. There's no peeing on this one and walking away. You've written me asking for pearls of wisdom from my 23,000-plus hours of flying. This pearl is about getting our BP where it belongs. Because if we lose control of it, we could die. Or worse, we could lose our medical and ability to act as PIC.

I'm not a physician, I don't play one on TV and I didn't stay at a Holiday Inn Express last night. But I did learn interesting things about blood pressure and how easy it can be for most of us to lower it. I had some time away from flying due to rotator cuff surgery, so I took the time to read all about hypertension. I started reading food labels and dropped my sodium intake to near zero. I even stopped drinking softened (salty) tap water. Hold your nose if you must, as you swallow



Top (systolic)	Bottom (diastolic)	Classification
Below 120	and Below 80	Normal 80 and below 80
Between 120-139	or Between 80-89	Pre-hypertension
Between 140-159	or Between 90-99	Hypertension 1
160 or higher	100 or higher	Hypertension 2

the following, unsalted, need-to-know medicine.

The first number, systolic blood pressure, measures the pressure in your blood vessels when your heart beats (contracts). The second number, diastolic blood pressure, measures the pressure when your heart rests between beats. The maximum systolic pressure (the first, bigger number) for a first, second and third-class physical are all approximately 155. It's an approximate number because the physician has some clinical discretion including checking it twice during the same visit. The recheck is to help with white-coat syndrome, BP cuff placement and to facilitate a perhaps more meticulous overall procedure and interpretation.

If a pilot with no known history of hypertension is found to have blood pressure consistently higher than 155/95, then further investigation is required. Initially, this should consist of recording the blood pressure twice a day (morning and evening) for three consecutive days. If at least four of these six readings are 155/95 or less and the pilot is otherwise qualified, then no further action is required, and the certificate can be issued.

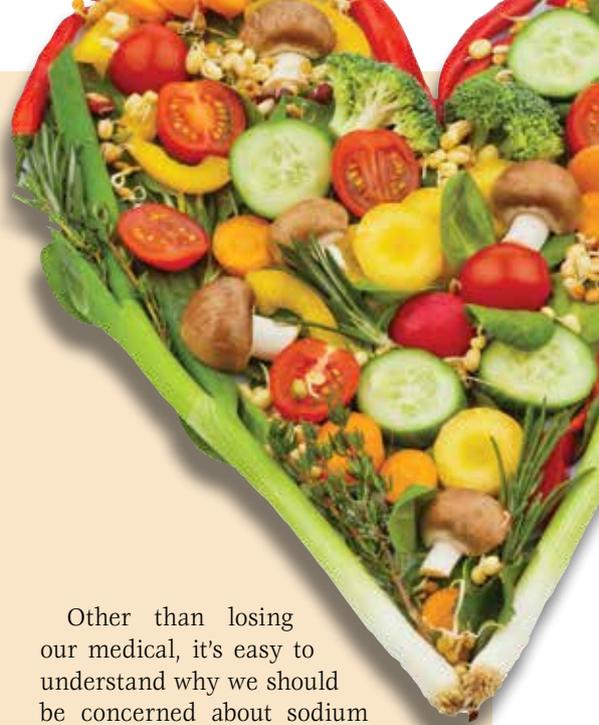
What If

If the three-day blood pressure checks confirm the presence of hypertension, then treatment of some kind will be required for certification. Once a person is on a stable treatment plan and their blood pressure is adequately controlled without significant adverse effects, certification can be considered.

For an individual who has already reported the hypertension and received an initial clearance, the follow-up requirements are simple. All that's required is a statement from the treating physician that the individual is in good health and is having no blood pressure-related problems. Some sample blood pressure readings should be included in the report. There are some things to know and do in order to avoid this "what if" scenario.

Worth His Salt

According to scientists at Weill Cornell Medicine in New York City, a high-salt diet can lead to significant mental decline. Researchers fed mice 8 to 16 times their normal salt intake and observed a dramatic drop in blood flow to the cortex and hippocampus. After three months, the mice were suffering from cognitive decline and struggled to navigate a maze. They believe their findings likely apply to people as well.



Other than losing our medical, it's easy to understand why we should be concerned about sodium and high blood pressure: it's all of that other heart attack, stroke, dementia, impotence and death stuff that it can cause. And getting lost in a maze would be terrifying. Hypertension affects the heart, kidneys, eyes and brain. High blood pressure is a risk factor for kidney failure and atherosclerosis

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(hardening of the arteries). Strokes can also come from damaged and weakened blood vessels in the brain, high BP having caused them to narrow, rupture or leak. High blood pressure can also cause blood clots to form in the arteries leading to your brain, blocking blood flow and also causing a stroke.

If we have high blood pressure, is our life as a pilot over? Not at all. The brain function of the mice was restored to normal when they resumed a normal diet. And the blood pressure of most pilots can be lowered with a few changes in lifestyle and diet.

Crew Meals

Fortunately, hypertension is easy to treat. For many people, simply achieving an appropriate weight (BMI), exercising regularly and restricting dietary salt (sodium) will control mild hypertension. Severely restricting salt intake worked great for me and lowered my BP from 150 to below 120 in just a few days. And therein lies this month's humbly offered pearl of wisdom. I have never needed to, or tried to, control my diet. You name it and I've eaten it:

spicy food, salty food, canned soup and canned "meats," all manner of chips, candy and condiments. I've even eaten actually a food, like bugs, tree sap, glue, paper and airline crew meals (no Tide Pods). But after 60-plus years of carefree and careless dining, my BMI is 24.0, A1C blood glucose is 5.3, HDL cholesterol is 35 and LDL is 83. And up until last year, my BP was below 140. When it climbed over 150 and started to threaten my FAA medical, sodium and I parted ways.

Here are three blood pressure myths and some final pearls of wisdom to consider before your next flight physical.

Myth No. 1: High blood pressure runs in my family so there's nothing I can do to prevent it. Yes and no. While hereditary, lifestyle and dietary choices have allowed many people with a family history to avoid it themselves.

Myth No. 2: I don't use table salt so I'm in control of sodium intake. Not good enough. About 75 percent of the sodium we consume is in processed foods. The worst are vegetable juice, canned soups, canned meats, canned vegetables, most



About 75 percent of the sodium we consume is in processed foods. Restricting dietary salt (sodium) will control mild hypertension.

condiments, beets, lunch meats, spaghetti sauce and ready-to-eat cereals.

Myth No. 3: I don't use any regular table salt, only kosher, red or sea salt. Wrong answer. Table salt, red salt and sea salt contain comparable amounts of sodium by weight. All are about 97 percent NaCl (40 percent sodium, 60 percent chloride).

Once we've licked our salt addiction, we can also consider some precautionary, pre-physical preparations to avoid other problematic peculiarities as well.

Continued on page 31

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Daher announced new features for its 2018 production TBM 910s and TBM 930s, including the first electrically-heated seats, a first in the single-engine turboprop category.

Adding to the cabin restyling implemented last year, every seat in

En Route

2018 TBMs Now Come with Heated Seats, a Turboprop First

2018 TBM 910s and TBM 930s are now heated. Once the mode is engaged by the pilot via a master control in the cockpit, each occupant can choose whether to utilize the heating and select either light or moderate heat settings.

Other new features on the 2018 aircraft are tailored for improved pilot interface. This includes backlighting on

the cockpit's central console to provide enhanced visibility at night for the manual trim, power lever, flaps lever and override controls. Additionally, a high-fidelity microphone has been incorporated in the pilot's oxygen mask for clear communications with air traffic control when the mask is in use.

"Updates for the model year 2018 underscore our commitment to constant improvement on the TBM 910 and TBM 930," said Nicolas Chabbert, senior vice president of the Daher Airplane Business Unit. "In addition to benefitting our owners and operators, they enhance the in-flight experience for passengers, which is important as we see the development of TBM sales to corporate and commercial operators." 



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En Route

New Film Details First U.S. Naval Aviators in WWI

Yale college students who took the initiative to learn to fly in preparation for America's entry into World War I and became the founding squadron of the U.S. Naval Air Reserve.

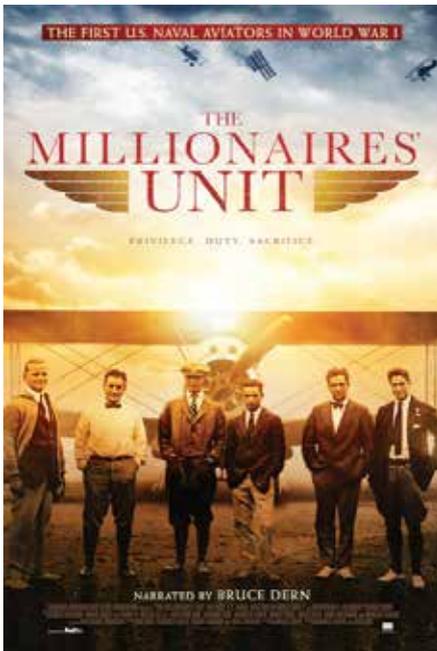
The award-winning film's VOD release date of February 15, 2018 was chosen to commemorate the 100th anniversary of the death of First Yale Unit member Albert D. Sturtevant, the first U.S. Naval Aviator killed in combat, when his plane went down in the North Sea on February 15, 1918.

Narrated by Academy Award nominated actor Bruce Dern, grandnephew of one of the aviators, the feature-length documentary charts the romantic, little-known story of the origins of American airpower and features very rare archival footage and thrilling dogfighting sequences filmed air-to-air

with replica WWI planes, some with original engines.

Inspired by Marc Wortman's book *The Millionaires' Unit*, the film has been developed and produced by descendants of the First Yale Unit, including filmmaker Ron King, producers Harry Davison and Mike Davison, and narrator Bruce Dern who are all grandnephews and grandsons of FYU members.

The Millionaire's Unit premiered last spring at the National Naval Aviation Museum in Pensacola, Florida, in their new digital IMAX Theater during NNAM's annual symposium. The film is now available on DVD and Blu-ray, as well as video on demand through Vimeo.com. Other VOD platforms will be available soon. 



Filmmakers Darroch Greer and Ron King have created an engaging film that combines history, aviation and inspiration. *The Millionaire's Unit* tells the unsung story of a group of

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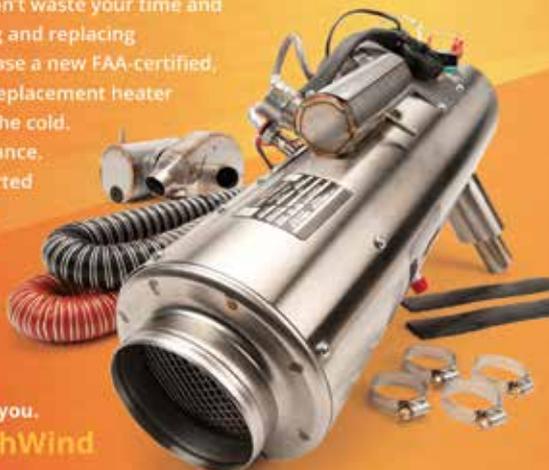
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And although most minor abnormalities are shown to be not clinically significant, the time, expense and anxiety associated with obtaining the required re-evaluation tests and exams can be avoided by simple preparation.

Before the medical exam you should be well rested and should avoid high-sugar meals, caffeine, tobacco, ibuprofen, decongestants and stimulant type medications. Also, meals high in sugar may cause an erroneous result in the urinalysis. Complex carbohydrates (green vegetables, whole grains and beans) and proteins before the exam will stabilize blood sugars. These recommendations will also help in achieving normal and consistent EKG results.

Something is Going to Blow

With any luck, these pearls of wisdom have convinced you to monitor your BP and to keep it in the normal (<120) range; maybe even buy a blood pressure monitor. They range from \$30 to \$90 for an automatic, electronic version. I'd get one with an arm cuff instead of for the wrist; they're more accurate.

Read food labels, stop eating salt, get your BMI where it belongs and have a few delicious green salads with sunflower seeds, chicken and beans before your next physical. Similar to running your engines at redline, with high BP, eventually something is going to blow. Remember, even if you stop eating bugs, tree sap and stress for breakfast, and even if you don't add salt to your crew meal, high blood pressure is something you can't just pee on and walk away. **T&T**

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

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How Much Is Enough?

In the past twelve months I have completed four 61.58 simulator events. Two in the M2 and two in the Mustang. You would think that would be enough. At least that's what I thought as I accidentally shut down the only running engine during my recent M2 recurrent at FlightSafety in Wichita.

It was the worst performance of my career.

I couldn't blame it on the simulator or the instructor. Both were excellent. But for three days training with M2 owner Larry King, I was behind the airplane. I couldn't find switches. My steep turns were sloppy. I scraped a wing on a V1 cut. Despite my miscues, I managed to exhibit the minimum skills necessary to pass. But I began to wonder if it was time to frame my pilot's license and hang it up.

It was that ugly.

After I returned home from the event, I looked in my logbook to see how much time I had actually logged in the left seat during the year. It was a single digit number. I had flown with Larry a number of times but always in the right seat and seldom as PIC. Thirty days later, I returned to the scene of the crime for a Mustang recurrent. My sim instructor was a guy named Ken Estes.

Ken was not in a good mood.

"I woke up at 3 a.m. this morning and chased two coyotes for half a mile. They broke into the henhouse and ate my favorite chicken. I've been up since then thinking about our sim session and how I could make it more interesting."

He had a strange look in his eyes.

After a GPS Rwy 14 approach at ICT with a circle to 01R, we repositioned to Gunnison, Colorado (KGUC). Right after departure, Ken programmed the simulator for a wind shear encounter and then a dual generator failure. Along the way, he threw in a surging right engine followed by smoke in the cockpit. "Hey captain," said Ken. "We've got smoke back here in the cabin." Sure enough, Ken had a smoke generating machine pouring a cloud of fumes into the simulator. With multiple checklists on my lap, I had to manually blow the gear down while wearing an oxygen mask and smoke goggles. It was intense, real, and gut wrenching.

And it was my best performance in years.

Why was I so lousy in the M2 and so good in the Mustang? For me, it was a lack of PIC time in the M2 and the difference in the G3000 and G1000 platforms. I am not sure how flight instructors do it, but I guess I need to be in the left seat to have my muscles memorize anything.

A week later, on a trip home in the M2 from Alpine, Wyoming (46U) to Dallas, I asked Larry if I could be PIC. "You want to fly from the right seat?" he said.

"No, I think I need to sit where the pilot sits."

Fly safe. 

With 6,000-plus hours in his logbook, David Miller has been flying for business and pleasure for more than 40 years. Having owned and flown a variety of aircraft types, from turboprops to midsize jets, Patty and David currently own and fly a Citation Mustang. You can contact David at davidmiller1@sbcglobal.net.

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