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NBAA Focus



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58 CHALLENGER 601-1A  
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56 CHALLENGER 601-3R  
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5 CHALLENGER 800  
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319 CITATION 525  
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151 CITATION CJ1  
69 CITATION CJ1+  
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160 CITATION CJ2+  
390 CITATION CJ3  
180 CITATION ENCORE  
306 CITATION EXCEL  
5 CITATION I  
288 CITATION I/SP  
478 CITATION II  
50 CITATION II/SP  
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329 CITATION MUSTANG  
138 CITATION S/II  
257 CITATION SOVEREIGN  
284 CITATION ULTRA  
287 CITATION V  
20 CITATION VI  
104 CITATION VII  
257 CITATION X  
199 CITATION XLS

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53 DIAMOND IA  
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282 ECLIPSE EA500  
47 EMBRAER LEGACY 600  
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158 EMBRAER PHENOM 100  
82 EMBRAER PHENOM 300  
123 FALCON 10  
28 FALCON 100  
25 FALCON 200  
176 FALCON 2000  
21 FALCON 2000EX  
81 FALCON 20C  
17 FALCON 20C-5  
26 FALCON 20D  
3 FALCON 20D-5  
7 FALCON 20E  
8 FALCON 20E-5  
59 FALCON 20F  
82 FALCON 20F-5  
229 FALCON 50  
8 FALCON 50-40  
113 FALCON 50EX  
135 FALCON 900  
21 FALCON 900C  
116 FALCON 900EX  
98 GLOBAL 5000  
112 GLOBAL EXPRESS  
25 GULFSTREAM G-100  
161 GULFSTREAM G-200  
8 GULFSTREAM G-300  
27 GULFSTREAM G-400  
222 GULFSTREAM G-450  
7 GULFSTREAM G-500  
330 GULFSTREAM G-550  
42 GULFSTREAM G-I  
110 GULFSTREAM G-II  
31 GULFSTREAM G-IIIB  
186 GULFSTREAM G-III  
188 GULFSTREAM G-IV  
317 GULFSTREAM G-IVSP  
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40 HAWKER 1000A  
9 HAWKER 125-1A  
2 HAWKER 125-1AS  
1 HAWKER 125-3A/RA  
2 HAWKER 125-400A  
29 HAWKER 125-400AS  
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4 HAWKER 125-600A  
11 HAWKER 125-600AS  
113 HAWKER 125-700A  
50 HAWKER 4000  
187 HAWKER 400XP  
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223 HAWKER 800A  
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335 HAWKER 800XP  
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67 HAWKER 850XP  
131 HAWKER 900XP  
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6 JET COMMANDER 1121B  
12 JETSTAR 731  
11 JETSTAR II  
51 JETSTREAM 31  
40 JETSTREAM 32  
15 JETSTREAM 41  
15 LEARJET 23  
26 LEARJET 24  
5 LEARJET 24A  
19 LEARJET 24B  
53 LEARJET 24D  
14 LEARJET 24E  
9 LEARJET 24F  
33 LEARJET 25  
57 LEARJET 25B  
7 LEARJET 25C  
94 LEARJET 25D  
6 LEARJET 28  
28 LEARJET 31  
172 LEARJET 31A  
43 LEARJET 35  
426 LEARJET 35A  
21 LEARJET 36

34 LEARJET 36A  
24 LEARJET 40  
219 LEARJET 45  
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115 LEARJET 55  
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293 LEARJET 60  
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16 SABRELINER 40  
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3 SABRELINER 40R  
24 SABRELINER 60  
1 SABRELINER 60A  
2 SABRELINER 60AELXM  
12 SABRELINER 60ELXM  
3 SABRELINER 60EX  
1 SABRELINER 60SCEX  
85 SABRELINER 65  
1 SABRELINER 75  
17 SABRELINER 80  
3 SABRELINER 80SC  
101 WESTWIND 1  
4 WESTWIND 1123  
45 WESTWIND 1124  
76 WESTWIND 2

## TURBO PROPS

### CHIEF PILOTS & OWNERS

Aircraft Count

275 CARAVAN 208  
1087 CARAVAN 208B  
3 CARAVAN II  
34 CHEYENNE 400  
221 CHEYENNE I  
14 CHEYENNE IA  
303 CHEYENNE II  
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58 KING AIR A90  
221 KING AIR A90-1  
135 KING AIR B100  
902 KING AIR B200  
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63 KING AIR B200GT  
2 KING AIR B200SE  
3 KING AIR B200T  
66 KING AIR B90  
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30 MITSUBISHI MU-2N  
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4 SOCATA TBM-700C1  
115 SOCATA TBM-700C2  
318 SOCATA TBM-850  
22 SOCATA TBM-900  
6 STARSHIP 2000A  
51 TURBO COMMANDER 1000  
27 TURBO COMMANDER 690  
129 TURBO COMMANDER 690A  
113 TURBO COMMANDER 690B  
58 TURBO COMMANDER 840  
16 TURBO COMMANDER 900  
23 TURBO COMMANDER 980

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### OWNERS

Aircraft Count

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479 BARON 58P  
137 BARON 58TC  
5 BARON A56TC  
142 BARON G58  
43 BEECH BARON 56 TC  
2 BEECH BARON 58 PA  
217 BEECH DUKE B60  
193 CESSNA 340  
556 CESSNA 340A  
120 CESSNA 402B  
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**FEATURES**

**4 Editorial**  
*Pebbles In The Road*

**6 Tanker Day**  
*Aerial Refueling In A KC-135R*

**14 2015 Holiday Gift Guide**

**From The Flight Deck**

**22 Scent Of A Simulator**  
*– Kevin R. Dingman*

**24 Who's The Boss?**  
*Be Sure You Stay Pilot In Command*  
*– Gary "Waldo" Peppers*

**Twin Proficiency**

**26 Check It Out**  
*– Thomas P. Turner*

**29 NBAA Focus**

**36 En Route:**  
*Hartzell Propeller Honors Company Founder*  
*FlightSafety Introduces Latitude Simulator*

**40 On Final**  
*Sea To Shining Sea*  
*– David Miller*



6



14



22



24



29

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## Pebbles in the Road



**M**oving along smooth pavement, it's sometimes disconcerting to find a pebble or two lying in the roadway. Bicycle tires spit them aside with a "ker-chung", they may bruise a runner's thin-clad foot, and motorcyclists fear an accumulation of them, particularly on a curve. Yet,

they are to be expected; life is populated with pebbles in our path.

Even flying activities, while lofted as we are on laughter-silvered wings, pick up a few pebbles once in a while. Metaphoric pebbles can include health issues that are minor to earthlings but career-interrupting for pilots. Unanticipated engine work can toss us a budget-busting pebble. And the dreaded Airworthiness Directive or service bulletin can threaten our aircraft's value if not complied with – forthwith.

From whence cometh these pebbles? Sometimes, they are simply dropped in our path by the Flying Fickle Finger Of Fate; othertimes, they originate with company legal departments, anxious to detach a product liability tail. And some are well-intentioned mandates devised by government agency bureaucrats.

For example, if you've tried to check in with Flight Watch on 122.0 or one of the high-altitude Flight Watch channels, you've found that the friendly weather voice is no longer there. The FAA determined it to be non-vital and underused, so the Flight Watch function is now part of Flight Service's air-ground support, obtained by looking up the local area's frequency. Minor pebble, but a nuisance.

A bigger pebble is the coming shift away from our venerable FAA Flight Plan format, now scheduled for October 1, 2016. Most of us can rattle off the flight plan information in sequence, from years of familiarity. Come next year, we're going to have to file in the much more complex ICAO style, even for domestic flights, an arcane overreach that can only be accommodated by using prestored PED data. Why the FAA thinks this pebble needs to be planted in our road is beyond my comprehension. One of the joys of returning to the U.S. from another country has always been the freedom to move about freely with minimal documentation or notification.

ADS-B started out as a big boulder, plopped down some time ago by FAA planners seizing the NextGen opportunity. After years of driving around it, we're seeing ADS-B chipped away into smaller, more-manageable pebbles, as avionics suppliers and shops devise ways of meeting the 2020 mandate. Lots of gravel still in our path, but we'll deal with it.

For piston-engine airplane owners, the stony problem of fuel availability roughens the path ahead. Gnat-straining environmentalists want to eliminate any perceived health risk, so our very-effective octane-booster, tetraethyl lead, is on their hit list, despite aviation's statistical insignificance. Hopefully, the efforts to develop a replacement unleaded avgas will clear the pebbles of cost, performance loss and availability.

Now, private aviation is too valuable a part of our existence to let a few pebbles in the road throw us off our stride. As long as we can negotiate the FOD debris, we'll keep on using our aircraft to provide the wonderful service we enjoy. But, it was sure nicer when the road was clear...

*LeRoy Cook*  
Editor



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NBAA 2015 - Las Vegas, NV  
November 17<sup>th</sup>, 18<sup>th</sup> & 19<sup>th</sup>



November 17th, 2015

11am – Universal Avionics

Universal Avionics Delivers Fans 1A and ADS-B Solutions Today

12pm – Stevens Aviation

Creating a High Quality Paint and Interior

1pm – Garmin Avionics

G5000 Beechjet Demo, G1000 King Air, Affordable ADS-B Options

2pm – Raisbeck Engineering

Safety and Performance Modifications for King Air and Learjet

3pm – Dallas Airmotive

Do Not Roll The Dice... Value Added Engine Overhauls

4pm – Rockwell Collins

Proline Fusion for King Air Demo

5pm – Bendix King

Affordable In-flight Internet and King Air AeroVue Cockpit Upgrades



November 19th, 2015

10am – Bendix King

Affordable In-flight Internet and King Air AeroVue Cockpit Upgrades

11am – CMD Flight Solutions

ADS-B Options for Part 23 and Part 25 Aircraft

12pm – L3 Avionics

ADS-B for Part 23 and 25 aircraft: Lynx & NXT600

1pm – Alto Aviation

Audio Designed With Your Aircraft in Mind



November 18th, 2015

9:30am – Flight Safety International

King Air G1000 Simulator Training

10am – 365 Jet

Checklist for Buying and Selling an Aircraft

11am – Raisbeck Engineering

Safety and Performance Modifications for King Air and Learjet

12pm – LoPresti Aviation

LoPresti BoomBeam HID Lighting for Improved Safety

12:30pm – Aircraft Lighting International

Aircraft Cabin Lighting - Energy Efficient and Customizable



Stevens Aviation Happy Hour! 1pm-5pm

1pm – Blackhawk

Blackhawk PT6A Engine Upgrade FAQ

2pm – Garmin Avionics

G5000 Beechjet Demo, G1000 King Air, and Affordable ADS-B Options

2:30pm – National Air Transportation Association

Tom Hendricks, President & CEO – NATA and the State of the Aviation Industry

3pm – Gogo Business Aviation

Airborne Connectivity 101

4pm – Rockwell Collins

Proline Fusion for King Air Demo

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# Tanker Day

# Air to Air Ref

By Adam Alpert



**T**here was one F-16C Fighting Falcon receiving fuel from the KC-135's refueling boom and another waiting. Endurance of the F-16 is limited to about 2.5 hours, even less when engaged in a dogfight. So there was almost always a receiver aircraft in queue, waiting to get tanked up. The 3-4 minutes needed to refuel can seem like an eternity when you're the one waiting to receive with little fuel in the tanks. Sometimes the fill-ups need to be sequenced, giving the airplanes with the least fuel a chance before everyone else is topped off. Then it's back to the fight.

Today's flight was a training mission, with the dogfights rehearsed and strict altitude and conflict limits established to virtually assure no accidents. The two KC-135s and three F-16Cs assigned were dispatched to an anchor point in New Hampshire airspace to

fulfill currency requirements, and also to demonstrate capability to community and business leaders from the region. It was Boss-Lift day, a chance for employers to experience the important contribution Air Guard members make, serving the country.

"Boss-Lift", known internally as Tanker Day, is not just a *for-show* event, however. The training is real; part of the normal Air Force readiness program, unmatched by any other country. Within hours of the 9/11/2001 attacks, Stratotankers from the eastern USA were on their way to assigned points. While many different forces and weapon systems were employed during the response, KC-135's were pivotal to making the operation work. Fighter and bomber endurance would have been a real issue without the KC-135, a flying gas station with as much as 200,000 lbs of fuel in its wing and belly tanks.

# fueling



“You can’t kick ass without gas” was the refrain I heard a lot while riding onboard.

The airplanes are old. The specimen I flew on was built in 1962. Over the years, there have been a number of upgrades, including modern Collins FMS/GPS avionics and new International CFM high-bypass engines to replace the original Boeing 707-style Pratt & Whitney water-injected turbojets. This 59 year-old design, designated KC-135R, now operates in global airspace with RNP 4, FANS, CPLDC, and RNAV approaches. Still, much of the KC-135 is original, including the systems used by the boom operator.

## Briefing The Plan

Like all training missions, this one began with a thorough briefing. F-16 pilot Major Dan “Tröl” Rissacher lead the discussion of training goals, assets to be deployed, flight plan, weather, allowed maneuvers, acceptable G-forces, emergency procedures, and the general area of operation. He also talked about the combat scenario; who would play the bad guy and how everyone’s score would be tracked. Consistent with aerial dogfighting from all past wars, the winning solution is almost always to get on the enemy’s tail to take the shot. How you get there is another matter. According to Rissacher, “With F-16 against F-16, there’s no aircraft advantage. It’s strictly pilot vs. pilot in a high-speed physically-demanding game of chess where we try to force errors, then exploit them.”





The KC-135R demands its own briefing, especially for the guests (passengers). The airplane is very utilitarian inside, with much of its wiring and ductwork exposed. Entry is via a large cargo door on the left side and seating is bench-style, running along each side of the interior. Although the pilots enjoy a pressurized EROS-style emergency mask system, much like that found in any GA business jet, there is no centralized emergency oxygen for the passengers. Instead, everyone receives an EEBD (Emergency Escape Breathing Device) hood, contained in a small plastic bag. In a case of depressurization, you are to remove the hood from the bag and crack it open, thereby causing the chemically-produced oxygen to flow, then don. We were given a live demonstration; I came away hoping the cabin stayed pressurized.

The KC-135R is also a very mechanical airplane, with cables linking the yoke to the control surfaces with no hydraulic boost except for spoilers, flaps, and rudder. The pilot would be overwhelmed by the control forces had not Boeing linked the yoke to tabs on the inboard and outboard ailerons and the elevators. (The outboard ailerons are neutralized except when flaps are deployed.) The pilot controls the tabs, which in turn move the actual control surfaces. Spoilers also activate to assist with roll when the flaps are deployed. Horizontal stabilizer adjustment is used for trimming the airplane, operated by an electrically-powered jackscrew. One very-seasoned KC-135 captain compared handling to a Piper Navajo; “certainly not the truck-like feel other big Air Force airplanes like the B-52 exhibit”.

There are no leading-edge slats, but the KC-135 does have very-formidable double-slotted Fowler flaps and Krueger leading-edge flaps to provide extra lift. All of this, along with nearly 22,000 lbs of thrust from



each engine, is needed to accommodate a MGTOW of 322,500 lbs. The KC-135R can carry almost twice its empty weight in the form of fuel, most of it accessible for provisioning receiver aircraft.

Once airborne, Captain Jamie Blume, the co-pilot, divulged some flight track and holding-position details that were withheld during the briefing. Our destination was AR631 (Air Refueler Route 631), a piece of airspace running east-west from near Kennebunk to Vermont’s southern Champlain Valley. Our holding pattern was defined by four waypoints, used to establish the refueler’s anchor pattern. The clearance was to hold at 22,000 ft while waiting for the receiver aircraft.

### Places To Avoid

The air refueler routes and anchor points are public information, but they are different from MOAs and restricted areas, and not typically charted or reported in NOTAMs. Fortunately, most of the operations are conducted in positive-control airspace, where ATC provides separation. “Hot” MOAs should definitely be avoided. It’s legal, but entering a hot MOA VFR can be very risky.

According to Major Rissacher, “it is generally a bad idea unless you have a lot of awareness of what exact



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military operations are going on and how to stay away from them. Most GA pilots assume that we, particularly fighter aircraft, are all-knowing and that is not the case. For example, many pilots I talk to say ‘well, you have radar so you know where everyone is and can avoid us’ and that’s wrong on many levels. First, that would require that I’m actively working on my radar screen, which is only a fraction of the time, and often not at all in air-to-ground training missions. Second, little, slow airplanes (particularly ones that don’t reflect much radar energy) are difficult to pick up until very close. Third, and most importantly, we cover a lot of ground/altitude in little time... There are often 6-8 aircraft, using every corner of the MOA, and they’re in an air-to-air fight, traveling 500 knots... even worse, we may change altitude from 45,000 to 500’ in seconds, during which the radar is useless and although we are looking outside it would be difficult to pick up a little airplane.” I was also told that what may appear to be a benign penetration can inadvertently disrupt what is always a very-expensive complex training exercise.

Once anchored, it was game on. F-16Cs, initially invisible, suddenly appeared; one on the port side and the other edging up from below and behind. It’s time to fill’r-up. I was fortunate enough to be stationed next to the boom operator. The two observers and boom operator

lay prone, facing rearward toward the boom controls and the receiving aircraft. This gives the operator an excellent view of receiver aircraft and surroundings, the best in the house!

The system used to deliver the fuel consists of a boom that carries a long hollow telescoping rod and complex nozzle that connects with the receiver aircraft. The boom extends from the rear belly of the KC-135, raised and lowered using a hydraulically-operated hoist. Two hydraulically-powered joystick-controlled ruddervators, mounted toward the boom’s end, are used to make the boom fly. “It’s a little like flying your own little airplane (in for a landing) and it’s challenging”, according to one boomer.

Part of the challenge is dealing with a multitude of different receiver aircraft. KC-135 customers include B-52 bombers, super-secret drone aircraft, and everything in between. Bigger airplanes, like the C-5, produce a large bow wave that tends to disturb the air around the boom, making it much more difficult to establish correct elevation. Smaller fighter aircraft like the F-22 require a special kind of TLC; even a slight scratch to that fragile stealthy paint can render the airplane tactically useless. The F-16 is particularly tough because the boom has to be flown around the canopy and a nine-inch antenna that is eighteen inches in front of the receptacle. Tricky!

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And fighter pilots don't like to wait. I was told that they get very good at quickly lining up with the KC-135's belly-mounted Pilot Director Lights (PDLs), and expect immediate service!



The actual fueling is an event to behold. Even the relatively-small F-16 fills the entire sighting window. This is the ultimate in close-formation flying. When the boom nozzle securely engages, positive indications are displayed in both airplanes. Fuel can now be safely transferred. Then, almost immediately after being fueled, the F-16 disconnects, and, in our case, launches a battery of high-temperature flares, a demonstration of the airplane's decoy anti-missile defense against heat-seeking missiles. Spectacular!

Once on the ground, I asked Major Rissacher what the future held for the KC-135 and F-16. Officially, the Air Force has stated that many KC-135s could fly well into the 2030s and beyond. As for the F-16, Rissacher thinks its days are numbered. "The F-16s Vermont has were built in the mid-80s and have around 6,000 hours on them (long past the lifespan they were designed for). The United States isn't buying any more. The Vermont Air National Guard is designated as the second F-35A unit, giving our skilled airmen the airframe we need to thrive

and survive for the foreseeable future." In Rissacher's world, the word "survive" means survive as a pilot. "The F-16 is a very capable aircraft, able to perform just about any mission. However, some of these missions assume some of us will be shot down. The

F-35A makes it much more likely that the pilots will return to their families and those same pilots/aircraft are around to fly the next mission."

As for the KC-135, it has already significantly exceeded the original design life Boeing specified. The airplane has outlived many of its customers, including F-100, F-104, F-105, B-58, F-4, SR-71, F-117 and many others. It remains ready to service the next generation of fighters and bombers, most notably the F-35 Joint Strike Fighter. While there are new modern refuelers in the works, including the KC-46 based on the Boeing 767, I would not be surprised to see the venerable KC-135 playing an important role for many years to come. Referring to Boeing's 1956 design, Joe Patroni, the fictional all-knowing cigar-smoking mechanic in the iconic movie "Airport", famously said, "Take the wings off this and you could use it as a TANK! This plane is built to withstand anything." And so it has. 

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The Aerocraft Mini features on-board LEDs which not only provide excellent visibility in low-light conditions, they can also be turned on/off remotely by the transmitter. Additionally, both still-shot photo and video recording start/stop functions are operable by a simple button push on the transmitter.

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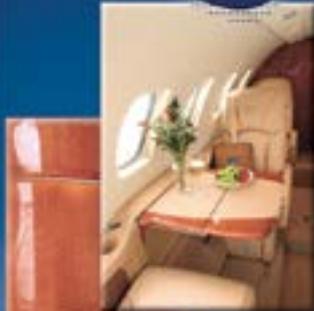
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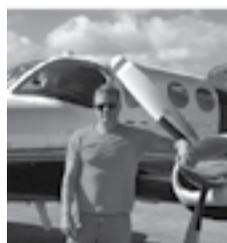
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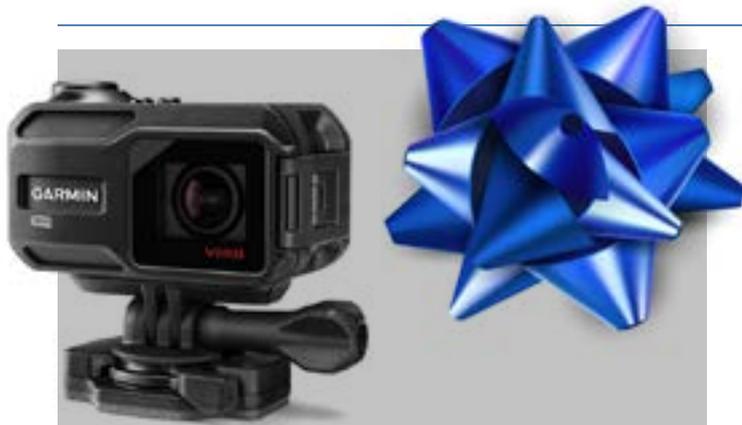
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The Garmin VIRB XE Aviation Bundle is now shipping! From the experts in aviation action cameras, Garmin is excited to announce a new package providing accessories and unique features tailored to capturing rich, high definition footage in-flight. The bundle includes a headset cable, prop filter, windscreen suction cup mount, 16 GB Class 10 microSD card, and a free trial to Garmin Pilot.

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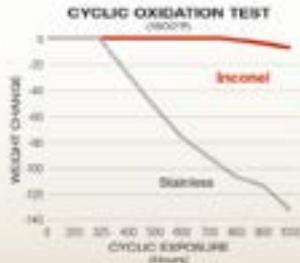


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# From the Flight Deck Scent of a Simulator

by Kevin R. Dingman



*I hated every minute of training, but I said, 'Don't quit. Suffer now and live the rest of your life as a champion.' – Muhammad Ali*

The ambiance of the layover hotel was starkly different – in a good way. Designated by the company as one of the half-dozen or so “training hotels,” it’s used mostly to house pilots during initial, upgrade and recurrent training – from four days to two months at a time. And, occasionally, for crews on a trip that is “off-schedule.” This means a trip in which we were supposed to be somewhere else for the night and something changed or went wrong and we ended up in an unplanned city. This time, we’re here as part of an off-schedule trip – not in training.

I’m on the trip with a new FO... well, new to the mainline. Justin is a “flow-through” pilot from a regional partner. It’s a contractual agreement that potentially saves the company training money and prevents regional pilots from bailing-out while they wait their turn to be paroled from poverty and sent up to the Big Show. He only has a couple of hundred

hours in the MD-80 (about three months), but is very experienced in the industry with sixteen years of time-served at the regionals; some of it as a captain. His wife, Shannon, is still a pilot there; like a family member left behind in a war-torn country. She is hoping to join the majors soon. Unless, that is, they get their wish and have a baby. They have been trying very diligently for a while, he points out with a glance and raised eyebrow. Not long ago, Justin completed initial training on the MD-80 and the training hotel is still fresh in his mind. The smell of the room, elevator, lobby and van, not to mention the unmistakable smell of the sim itself, are burned into your brain and stomach. It was easy for him to notice the different feel. We’re both grateful to be guests of the hotel as crew and not headed to training.

## You Can’t Win

Pilots going to training are everywhere, like cockroaches.

They scurry around the lobby for the free hot breakfast before their scheduled pick-up time to the flight academy. Even in civilian clothing, you can tell they’re pilots and not normal guests: we all look alike, even the ladies, and even without a kit-bag. It was that way in the military too. Unless you’ve worked for a Part 121 operation and have been through the ritual of training, over-and-over-and-over, it may be difficult to relate to the stress and moderately-unpredictable nature of the arduous ordeal. It’s like a flight physical: you can’t win, only break even. I sat outside as the sun came up, after my free hot breakfast (for which I did not scurry), writing this article and enjoying a coffee. I watched as the pilots reluctantly, solemnly and silently boarded the shuttle to the flight academy to be tortured, I mean trained – poor bastards. The day begins with the sound of the cargo and passenger doors slamming closed and the rough driving technique of the hotels non-CDL drivers. The ride is eerily quiet, as if the pilots are a group of puppies, whimpering softly with darting eyes as they are driven to the vet – trying to not wet the seat. It’s that bad. You don’t see many of them with tongues hanging out, nervously panting, but it would not be out of context.

## Dial-A-Disaster

The simulator schedule begins extremely early. The things cost a lot of money just sitting there unused, so scheduling them eighteen hours per day lessens the impact of fixed costs. So what if the pilots are half asleep at 0400 or 2300? The adrenaline with pull them through. The crews now boarding the van are the lucky ones, likely with more seniority or based in a western time zone – the ones with the primo simulator times. The sun is already rising in DFW and the first six-hour block that began several hours earlier is half finished. Those pilots left the hotel long ago, well before the hot breakfast was open, and were getting

two hours of oral review followed by four hours of “Dial-A-Disaster”: an accurate designation used to describe the way in which the simulator instructor/evaluator can select very bad things to happen to you from the control console behind the crew. It’s always nighttime in the sim, you are always in the weather, always in icing conditions, the RVR’s are always 600/400/300, crosswinds are within three knots of the limit and something is always on fire, leaking or about to fail – like a motor, flight controls, hydraulics, pressurization or fuel system. A trip to the vet would be way better.

Time spent in briefings and the simulator is used efficiently and productively, practicing everything from engine failures, to windshear to CAT III approaches. The annual changes in training are extremely valuable: lessons learned through ASAP (NASA safety reporting system), mistakes made by pilots around the world and fixes to poorly written procedures. Depending on the age and category of the device, the ability to accurately recreate these lessons, in which the realism and feel of the aircraft is sufficient, varies. Training devices are categorized in accordance with their ability to recreate flight conditions, including aircraft and ground-based systems, weather, wind, sound, motion and malfunctions. Most simulators, and some FTD’s, (Flight Training Devices), recreate instrument flight quite passably – some with more realism than others, and some that the FAA considers accurate enough to be used for qualification and requalification training events. Flight training devices, the ones that don’t move, are classified Level 1 through 7, with 7 being the most sophisticated. Only devices that have motion are called simulators and are classified Level A through Level D.

### FTD’s by the Numbers

Remembering the FTD classifications is simple because three

of the FTD levels are no longer in production and level 7 refers to helicopters. That leaves levels 4, 5, and 6 for us fixed wing folks. Level 4 is a part-task-trainer. You can expect to see buttons, knobs, switches and touch-screens that help you learn procedures for instruments or flight management systems and that’s about it. There will be no control yoke, but for anyone transitioning to a new avionics suite, this type of FTD is a blessing. Level 5 represents a class of aircraft (SEL, MEL). At this level, the device is starting to look more like an aircraft; there’s a yoke, for example. Level 6 is accurate for a specific aircraft, including spatial relationships and functions. It uses aerodynamic data and flies with more realism. When motion is added, we can call it a simulator.

### Sims by the Letter

Not many Level A simulators still exist – less than a dozen. They have unsophisticated visual systems and very little data for simulating terrain and airports. One aircraft still using Level A simulators is the Lockheed JetStar, one of the first business jets. Level B barely exists. Level B can give you 80 percent of initial training for a type rating, and 100 percent of recurrent training if the sim has circle-to-land privileges added to its certification. Level C steps a notch higher; there are tighter tolerances on data and the scenery is more accurate. All instrument currency requirements, including a landing and circle-to-land approaches, can be met in this simulator and many pilots use it. Last is Level D and you can do everything in it, including full type ratings. Daylight scenery is a requirement and they have better data and tighter performance tolerances. Other devices and simulators give credit for flight experience, and that includes the approaches, holding, and the navigation portion of the IPC, but you’ll not get credit for a landing unless you’re in a Level C or Level D simulator and only these can be used for a full IPC.

### By Any Other Name

Using a sim instead of the airplane can generate a significant cost advantage and save on wear-and-tear, not to mention leaving the airplane available for use on the line. The most obvious benefit of the simulator, however, is the Dial-A-Disaster function. We may hate it, but we can safely experience and practice all instrument procedures and some really bad things that would be difficult, or foolish, to recreate in the air. This includes taxiway markings including SMGCS, and some things we seldom experience; stalls, upsets, windshear, icing including tailplane icing, flight control hard-overs and of course the obvious fires, engine failures and emergency descents. Psychologists would tell us that our heightened sense of sight, sound and smell during an event, such as simulator training, is due to apprehension, anxiety and adrenaline – along with our type A, over-achiever desire to succeed, if not excel. If this were not true, would completion of training be as sweet? Though not easy, we should ignore negative reminders like the sounds and smells, and appreciate the skills that modern simulators give us – even if it feels like going to the vet. **T&T**



*Kevin Dingman has been flying for over 40 years. He’s an ATP typed in the B737 and DC9 with 21,000 hours. A retired Air Force Major, he flew the F-16 then performed as a 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](mailto:Dinger10d@gmail.com)*

# Who's the Boss?

## Staying Safe When There Are Two Pilots In Command

By Gary "Waldo" Peppers



**Y**ou're the professional turbine-meister for a mid-sized company whose owner is also a pilot. He's legally current and qualified in the company jet, though minimally experienced in type. He likes to fly left seat whenever he can, which is not often, and usually takes you along as his copilot while the other pilot rides in the back.

I had a boss like that once, 25 years ago – only I called him “General.” He was the commander of the Air Defense Weapons Center at Tyndall AFB, Florida.

Whenever the general had official business, he took a jet from one of the three squadrons of 325th Fighter Wing at Tyndall. He didn't need a regular pilot – he had eighty F-15 Instructor Pilots to choose from. The Air Force doesn't allow general officers to fly solo in fighters, even if they're qualified in the jet, unless they fill a required operational billet. As the 325 FW is not part of ADWC, the general had to fly the “family model” F-15B with a safety pilot.

One day the rotation fell to my squadron. I was a flight commander with better things to do than act as the general's seeing-eye captain. But since I wasn't on the schedule that day, I drew the duty.

It looked to be a good trip, anyway – just a one day out-and-back to Scott AFB, Illinois for a generals' luncheon. My Aunt Wini was a government civilian working at Scott and would meet me for lunch. The weather was clear all the way. Plus, I'd log four hours of F-15 time that I wouldn't otherwise.

I filed the flight plan as a stop-over with three hours on the ground at Scott, per the general's itinerary. The Standard Instrument Departures out of Tyndall, designed for fighters, permitted unrestricted climb to the flight levels. Scott's SIDs, however, were designed for transports: lots of turns, step-climbs, and long legs at low altitude. In the departure remarks section for the return leg, I entered: “Request unrestricted radar climb.”

I greeted the general at the squadron and briefed him on the flight. We grabbed our flying gear from Life Support and rode out to the flight line in his staff car. I did a quick preflight, having done a thorough one an hour before, while the crew chief helped the general strap into the front office. I climbed into the back seat and the general's driver drove off to Base Ops to await our call.

Procedurally, the general was pretty sharp. He handled both the radios and the flying, just like he was in a single-seat fighter again, while I discretely left hot mike off and spoke only when spoken to, mostly. This was not an exercise in CRM and I wasn't flying as the general's copilot. I was the “safety pilot” required by regulation. I prompted him just once, to recheck his outbound radial from Birmingham, but it was otherwise a flawless flight.

Following lunch at the Officers Club with Aunt Wini, I checked our flight plan and updated the weather at Base Ops. When I briefed the general on our departure request, he said he didn't want to fly an unrestricted departure. “I think that's just showing off”, he said. I tried to explain that “unrestricted” didn't require an afterburner (AB) climb; it only meant that departure control would coordinate with Center for an expeditious climb instead of stair-stepping us.

Normal takeoff in an F-15 is to accelerate in AB to 300 KIAS and then to continue the climbout at 350 – steeply with AB or shallow without AB. Military jets of the fighter persuasion are not restricted to 250 KIAS below 10,000 feet as are lesser mortals. Still, whenever I couldn't get an unrestricted climb, I limited my airspeed to 300 knots.

When I suggested that technique, the general demurred. “That's not what the tech order says. Just file for a standard radar departure.” Well, at least we wouldn't have to fly one of those spaghetti-noodle SIDs. I amended the remarks section accordingly.

The first hint this would be a difficult departure was our takeoff clearance: runway heading to 3,000. Yikes! 350 knots at 2,500 AGL!

The general executed a textbook takeoff, accelerated to 300 before deselecting AB, leveled off at 3,000 feet and 350 knots, and finally called Departure. I had my notepad and pencil ready.

Sure enough, Departure immediately gave us a climb to 5,000 feet and a heading change. I wrote them down as the general read them back and promptly complied. Departure then gave us a new squawk, which I noted. Preparing to hand us off to Center, I thought. The general acknowledged and dialed it in.

Departure then told us to climb and maintain 7,000, contact Kansas City Center on 368.3, and squawk 4165. Again, I wrote the numbers down as the general acknowledged the instructions and read back the altitude. I noticed the squawk they gave us was the same as the previous code assigned and, because ATC normally only assigns two number changes at a time, that meant we weren't squawking the right code.

"General," I said, "Check your squawk. Should be 4165. They gave it to us twice." We were established in a climb as the general read back the correct code.

He called up Kansas City Center on the new freq, but all we heard was static. "What frequency are you on?" I asked. "Two sixty-eight three." I looked at my notepad. "It's supposed to be *three* sixty-eight three," I said. When I looked up at the altimeter I saw we were passing 8,000 feet, still climbing.

"*Where are you going? Get back down to seven thousand!*" I don't normally raise my voice to generals. "They cleared us up to eleven thousand," he said. "No! They cleared us to *seven* thousand! Eleven thousand would have been 'one-one thousand!'"

He hesitated a moment, digesting what I'd just told him. I shook the stick and declared, "I have the aircraft." I rolled the F-15 upside down and pulled the nose down aggressively, rolling right side up at 7,000 feet.

As soon as the general corrected the radio frequency, we caught the last of KC Center's discussion with an outbound commuter plane: ". . . at seven thousand now but he's not talking to me." I still had the aircraft. "Kansas City Center, this is Cobra 01, seven thousand."

"Cobra 01, I showed you at eight thousand three hundred a minute ago. Traffic is a Bombardier now passing well behind at eight thousand." "Roger, Cobra 01," I answered. Never acknowledge a violation over the radio – or telephone.

"Cobra 01, call me on the ground at the following number when ready to copy." Crap! Busted! I copied the number and said I would call him, but I had no intention to do so.

The driver brought the sedan to the jet as we shut down. While I did the postflight, the general ducked into his car and got on the phone. I'd cautioned him not to call that number before talking to our wing's ATC Liaison Officer. Generals rarely take advice from captains.

With no skin in the game – the general had no civilian certificates and zero experience with FAA tyranny – he offered up both our names, ranks, and SSNs (had to call the squadron for mine), violating long-standing DoD regulations along with the Privacy Act of 1974. I made my report to our ATC Liaison, who investigated the violation in accordance with USAF regs.

Within weeks, I received several FAA letters threatening my civilian certificates. I turned them all over to the investigating officer, who patiently reminded the feds that military operations are not subject to FAA investigations, and that all the personal information the general had improperly provided must be stricken from their records, according to U.S. code.

The Air Force investigation eventually found me partially negligent for the incident. I agree. I should have placed priority on watching our altitude and let the general sort out his own misdial numbers. I should have offered to handle the radios for him on departure, but I doubt the general would have let me. I received no punishment from the Air Force, however, and the FAA has no record of the violation. I checked.

The report laid the primary fault on the general. I doubt there were any consequences, though; he retired the following year with his two stars intact.

If you've ever been an Air Force pilot since 1990, you've had to sign off a particularly strong-worded Operations Read File item, reissued annually, that warns pilots not to provide *any* personal data on flight plans, to the FAA, or to ATC. Yeah, that was me. You're welcome.

To this day, I hold the general in very high esteem, which is why I've chosen not to reveal his name. He was one of my high school heroes, scoring two MiG kills over North Vietnam before I even turned sixteen. And, God bless him, he's still my hero. 



*Gary Peppers is a 15,000-hour ATP who holds CFI, CFII, helicopter, and B-737 type ratings. He served 29 years on active duty from 1971, flying Army UH-1 and OH-58 helicopters and Air Force F-15s and OV-10s. Recalled to active duty in 2009, he flew MQ-1B Predators in Iraq, Afghanistan and Libya. Retired in 2013 to Cape Coral, Florida, he owns a Piper PA-31 Navajo and a PA-24 Comanche.*



# Check It Out

Recently, I flew with a pilot who has been flying the same type of airplane for about 40 years. He's now in his late 70s. Besides being sloppy with all his flying techniques, I noticed that he didn't use a checklist. When I queried him about this, he told me that he's been flying for so long that he didn't need the checklist. My response was that, as we all get older, our memory gets worse, not better, and it was too easy to forget something, no matter how long you've been flying the same airplane or a similar one.

The instructor asked what I could do to help him make the case for checklist use.

### Check it out

A big part of the problem, in my opinion, is that instructors often do a lousy job of teaching checklist use. Think about your own exposure to learning about checklists. Unless you trained in the military or in a professional flight academy, you probably were taught to use a checklist step-by-step in starting the airplane, and when performing the engine run-up and Before Takeoff checks. Then, you stuffed the checklist in the seat pocket or threw the Pilot's Operating Handbook onto the back seat and went without for the remainder of each flight. Once you passed your checkride and were out flying on your own, you were probably tempted to stop using even the start-up and Before Takeoff checklists. After all, you now knew how to fly.

In your opinion, you didn't need those training aids any more. Unless you later became a professional pilot, flying as part of a multi-pilot crew, you probably retained this attitude toward checklists. Then, you may have found the checklists to be so detailed, long and convoluted that it became easy to miss items (even the critical ones), and you tend to focus so much on the checklist you forget you're in command of a rapidly-moving piece of machinery in a harsh and unforgiving environment.

No wonder, so many times, we forget something vital that can lead to a mishap.

### Epiphany

I changed my attitude about checklists one day over southwestern Missouri. I had flown from Wichita, Kansas to Springfield, Missouri, about an hour's flight. For expediency and flexibility I was using VFR Flight Following. After dropping off a passenger, I departed for the return to Wichita. It was late morning and cumulus clouds were beginning to build, so between dealing with traffic and maneuvering between the cloud build-ups I

was pretty busy. Soon, I was level at 8,000 feet westbound and out of the Springfield area. After a while, I noticed I had forgotten to lean the fuel mixtures and was still burning about 22 gallons per hour per side. Now, I'd only flown an hour to Springfield and I expected to fly a little over an hour back to Wichita, so if I'd never found my omission I would not have had a problem. But, if I had been planning this second flight all the way to Denver, for example, or if I had originally left with less than full fuel, or if the weather worsened and I needed fuel to fly to an alternate, I might have run out long before my preflight planning suggested I would. Wouldn't it be great, I thought, if there was some sort of reminder I could use to be certain I'd not forgotten things like mixture and switching fuel tanks and retracting cowl flaps? Then I remembered – there are checklists that cover *all* these things.

### Do, then check

The proper use of in-flight checklists is to confirm you haven't forgotten anything. We don't call them "do-lists" (items we need to *do*), we call them "checklists" (things we need to *check* were actually completed). Manipulate the engine controls, or get the airplane into configuration, or transition into a new phase of flight, then *check* that you haven't forgotten anything by referencing a checklist. This accomplishes the goal of having checklists in the first place – not as learn-to-fly training aids (although they are good for that also), but as a safety aid to compensate for human factors.

If any cockpit task screams out for backup with a printed checklist, it's selecting and activating a GPS-guided approach before descending toward the ground in actual instrument conditions. VFR or IFR, GPS navigation significantly improves position awareness and arguably has the potential to increase safety-of-flight across the board. But GPS systems are much more complicated than non-GPS equipment, and each model of GPS and associated displays has its own operating logic and pilot interface.

If I'd had the practice and discipline to use a Cruise checklist after level-off, for instance, I would have immediately caught my failure to lean the mixture after departing from Springfield that day. Level off, get everything set, then pull out the list and make sure you've not forgotten anything. *That's* how to use a checklist.

### Human factors

We use checklists because as pilots we must constantly fight:

Complacency. Doing the same thing over and over again makes it easy to forget something once and think it's been done. Having logged hours of flying, and years of flying the same type of aircraft, lulls us into thinking there's no way we'd miss some vital task. The accident record says otherwise.

Distraction. Traffic, weather, passengers or unusual situations steal our attention away from the routine flying tasks. Stress – from family, scheduling pressures, and other non-flying concerns – diverts our concentration from the cockpit.

Fatigue. Face it, few of us get as much sleep as we really should. Often, our flying is done after a long day's work, or bunched between other activities and responsibilities on weekends. Ironically, the more flying time we have, the older we have become, and age makes us more susceptible to fatigue. Flying itself is a fatiguing activity, from the noise, turbulence, workload and the duration of flight; mild hypoxia from flying even at low altitudes can make us tired long before other symptoms appear.

Fixation. A form of distraction, fixation is when a specific object or activity demands so much attention we forget everything else.

Forgetfulness. Like the instructor at the beginning of this article said, the older we get the more forgetful we seem to be.

We can't avoid complacency, distraction, fatigue, fixation or forgetfulness. That's why we have to have a backup...in the form of printed checklists, and the skill to use them.

**Here's my challenge to you:**

Learn to use the Before Start, Start, Before Takeoff, Climb, Cruise, Descent, Approach, Landing and Shutdown checklists. If your airplane doesn't have a printed list that covers what you need (for instance, GPS approach selection and activation), then write one customized to your needs. Make

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checklists short and usable, covering the vital things-that-can-hurt-you steps.

Sit in the airplane and run through each checklist, actually moving switches and controls if it's safe to do so on the ground, until you know the checklist procedures well.

Keep your checklists handy in flight and, after you complete each transition, confirm your actions by running through the list. Make checklists as much a part of your flying as trimming off control pressures.

Use this newfound familiarity with the checklists not to convince yourself you know it all and don't need a reminder, but instead as reinforcement to head off the effects of complacency, distraction, fatigue, fixation and forgetfulness. Do, then check.

If you're an instructor, insist on this level of checklist use. Lead by example, using checklists every time you fly. 

*Thomas P. Turner is an ATP CFII/MEI, holds a Masters 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](http://www.mastery-flight-training.com).*



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# NBAAA

NATIONAL BUSINESS AVIATION ASSOCIATION

## focus



### *Industry Must Remain Engaged, Vigilant as 2015 Draws to Close*

*by Ed Bolen NBAA President and CEO*

As the clock ticks down towards the final days of 2015, it's natural for us to reflect upon the policy challenges that confronted our aviation community over the past year, and the efforts undertaken by NBAA and the industry to respond to those challenges.

I believe we can be cautiously optimistic when it comes to our policy concerns, but we also have equal reason to believe that work remains to be done in several areas, and that we must remain vigilant and ready to mobilize in both the national and local legislative arenas.

For example, as readers of *Twin & Turbine* are aware, the freedom of access and movement that business aviation relies upon is at risk from recent proposals for creating a privatized air traffic control (ATC) system funded by user fees, as part of the Congressional debate over reauthorization of the Federal Aviation Administration (FAA) taking place in Washington, DC.

Should legislation to privatize ATC come to fruition as part of the next FAA reauthorization bill, Congressional oversight of our nation's airports and airspace could be replaced with a "board", or similar other entity consisting of unelected individuals.

We have already seen how similarly privatized systems have negatively impacted general aviation in several foreign countries, as these entities tend to favor their own collective interests. Privatized systems also receive funding through user fees, which in turn require a new bureaucracy of billing agents, collectors and auditors that impose a huge administrative burden on those required to pay the fees.

As with any threat to business aviation, NBAA has responded forcefully. I have testified repeatedly before Congress to outline the association's concerns, and NBAA's call to action on the issue prompted individuals and business aviation groups to send thousands of e-mails and letters to Capitol Hill.

The ATC-privatization threat isn't the only concern we've had to stay focused on; we also recently confronted the possibility of yet another shutdown of the federal government. Avoiding a shutdown is important for business aviation because our industry is more regulated than most, so disruptions to government services have a disproportionately negative impact on us.

You remember what happened during the shutdown of 2013: many vital FAA services were suspended, greatly harming the aviation community. NBAA and its members were very active in calling on leaders in all corners of government to end the shutdown, and after 17 days, Congress and the President concluded the shutdown, restoring government services.

Fortunately, the situation has not been as pronounced this time around. Congress narrowly avoided a shutdown after Sept. 30 through passage of a resolution to extend funding for these services, preserving them through December 11.

As with the issue of FAA reauthorization, it is likely when we reach the December deadline on the extension, this issue will soon return to the forefront, and the business aviation community may again need to mobilize. NBAA will continue this work, and I'm confident we will be able to count on the people in business aviation to support these efforts. 

## NBAA Joins Groups Opposing Unilateral Emissions Standard

**N**BAA recently joined with other industry stakeholders in formally opposing calls from within Congress for the U.S. Environmental Protection Agency (EPA) to take unilateral action in adopting aircraft emissions standards before the issuance of an internationally agreed-upon standard.

Following extensive deliberations and consultations with industry stakeholders – including NBAA, through its representation on the International Business Aviation Council (IBAC) – the International Civil Aviation Organization (ICAO) is expected to consider emissions proposals during its 39th General Assembly gathering in late 2016.

“The global community is, in fact, at the tail end of a six-year collaborative and complex process to achieve this goal,” noted the Sept. 22 letter to Congress, which was signed by NBAA President and CEO Ed Bolen and leaders of seven additional aviation groups. “The EPA is working actively at ICAO along with the FAA, industry and civil society stakeholders and representatives of all ICAO member countries to develop a CO2 emission standard for future aircraft.”

The EPA first asserted it has the authority to establish a U.S.-specific aircraft emissions standard in an advance notice of proposed rulemaking (ANPRM) issued last June, saying the move was justified because of an endangerment finding that aircraft emissions may pose a human health concern.

In comments submitted to the federal docket on Aug. 31 in response to the ANPRM, NBAA reiterated the Association’s significant concerns over any move by the EPA to implement a unilateral aircraft-emissions standard without considering approaches to emissions policy being considered by ICAO,

the appropriate international governing authority.

On a global scale, the aviation industry contributes less than two percent of total global carbon emissions, with business aviation responsible for just two percent of that total, or .04 percent of worldwide emissions. Furthermore, the U.S. aviation industry has improved its fuel efficiency by more than 120 percent since 1978, saving over 3.8 billion metric tons of CO2 – the equivalent of removing 23 million automobiles from the road in each of those years.

NBAA has continually worked with a coalition of other industry stakeholders regarding aircraft emissions, with Association officials participating on several national and international working groups focused on emissions policies.

“Our industry-wide efforts are bearing fruit, as the EPA itself has documented,” the letter continued. “Despite the industry’s strong record to date, we are active participants in a global coalition that has committed to 1.5 percent annual average fuel efficiency improvements through 2020 and carbon-neutral growth from then on, as well as a 50-percent reduction in net emissions by 2050 compared to 2005.”

The groups’ letter also noted the aviation industry’s significant contributions to the U.S. economy, “comprising 5 percent of U.S. economic activity, driving nearly \$1.5 trillion in economic activity and 11 million jobs.”

Other signatories to the letter were: Aerospace Industries Association, Air Line Pilots Association International, Aircraft Owners & Pilots Association, Airlines for America, Cargo Airline Association, General Aviation Manufacturers Association and NetJets Association of Shared Aircraft Pilots. 

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## Aircraft May Now Stay in Cuba for Seven Days

A recent easing of tensions between the U.S. government and Cuban leadership may ultimately serve to open up the island nation to general aviation (GA), but it won't happen overnight.

Changes recently announced by the U.S. Treasury and Commerce departments allow U.S. aircraft operators authorized by the FAA to fly into Cuba to keep their aircraft there on "temporary sojourn" up to seven consecutive days. Previously, aircraft were limited to a single overnight.



The latest revisions also allow, on a case-by-case basis, for export/re-export to Cuba of items "to help ensure the safety of civil aviation and the safe operation of commercial passenger aircraft." That includes aircraft parts and components; flight safety and ATC software and technology; and aviation weather-related equipment, airport safety equipment and devices used for security screening of passengers and baggage.

Air ambulance and other related emergency medical services for travelers in Cuba are also now authorized by general license.

Other than FAA approval, there are two key requirements U.S. operators need to meet before flying into Cuba. Pilots will need a permit from the civil aviation authority in Cuba to land at one of their designated airports, and passengers must also fall within one of the 12 travel-authorized categories such as professional research and

meetings, educational, religious, humanitarian, journalistic and other defined activities.

A regulatory change on Jan. 15 eliminated a requirement to obtain a license to travel to Cuba through the U.S. Treasury Department's Office of Foreign Assets Control. A change on July 21 removed the need for operators to obtain a temporary sojourn license from the U.S. Department of Commerce's Bureau of Industry and Security.

"The Cubans do require proof of liability insurance coverage and, at the moment, this is a problem for many aircraft owners and operators as many U.S. insurance carriers and agents are simply not up to speed with the new regulations," added Jim Parker, owner of Caribbean Flying Adventures, who has flown into Cuba several times.

Parker said of the 10 international airports in Cuba, most have Jet-A fuel and three have avgas. Landing and parking fees are based on maximum takeoff weight.

Despite these changes, it's important to note that tourism is not yet permitted for U.S. citizens, and also that crew aren't included in this regulatory change. This means that even though the aircraft may be permitted to stay on the ground, the crew will have to drop and go unless they secure a specific license which will take additional time to obtain.

Still, these moves may signal the start towards eventual acceptance of GA flights to and from Cuba.

"My observation is that within six months we aren't going to have to worry about any of this," said William McNease, CAM, vice president of operations for aircraft management and charter operator Priester Aviation, which received FAA permission in August to incorporate Cuba in its operations specifications. "It's going to be like flying to Mexico." 

## House Hearing Highlights Need for Action on UAS Regulations

**A** recent hearing before the U.S. House Committee on Transportation and Infrastructure's aviation subcommittee regarding the safe utilization of unmanned aircraft systems (UAS) highlights the urgent need for the Federal Aviation Administration (FAA) to issue federal regulations for the burgeoning industry.

A primary topic at the hearing was the FAA's failure to meet a three-year-old, congressionally mandated Sept. 30 deadline to implement regulations governing the use of small unmanned aircraft systems, or s-UAS. The agency issued a proposed framework earlier this year, but final rules aren't expected before 2016.

In his testimony, FAA Deputy Administrator Michael G. Whitaker, FAA deputy administrator stressed the need to maintain a focus on operational safety. "[The] FAA does not underestimate the importance of integrating the range of UAS technology into the NAS, but there are significant safety challenges that must be mitigated for this to occur," he added.

NBAA President and CEO Ed Bolen echoed that sentiment, noting that NBAA has been directly involved for years in efforts to assist the FAA in moving ahead on UAS policies and regulations in a deliberative, though expeditious, manner.

"It is clear that lawmakers share our concerns about the widespread proliferation of UAS without clear guidance, or definitive regulation of the industry," Bolen added following the Oct. 7 hearing. "It is now more apparent than it's ever been that we urgently need guidance, through the established rulemaking process, which produces a national regulatory framework that enhances safety and creates a reliable set of operating procedures for UAS operators and the broader public alike."

NBAA has long maintained that it is imperative that any introduction plan for UAS be focused on safety. This means UAS should not share the same airspace with manned aircraft until they have equivalent certification and airworthiness standards as manned aircraft, including the ability to take timely directions from air traffic control, and to sense and avoid other aircraft and UAS.

Also testifying at the hearing "Ensuring Aviation Safety in the Era of Unmanned Aircraft Systems," James Hubbard, deputy chief for state and private forestry with the U.S. Forest Service; Capt. Tim Canoll, president of the Air Line Pilots Association; Rich Hanson, director of government and regulatory affairs for the Academy of Model Aeronautics; and Dr. Mykel Kochenderfer, professor of aeronautics and astronautics at Stanford University. 



**It is clear that lawmakers share our concerns about the widespread proliferation of UAS without clear guidance, or definitive regulation of the industry**

## From Engaging Presentations to Impressive Speakers, NBAA2015 Promises to Dazzle in Las Vegas

**E**ach year, NBAA's Business Aviation Convention & Exhibition is where we view business aviation's products and services all in one place. The event also is an opportunity to network with peers, learn new skills, and reflect on the state of the industry as we move toward a new year.

NBAA2015 will continue this proud tradition, bringing together approximately 26,000 key industry personnel from around the world, including current and prospective business aircraft owners, manufacturers and customers into one meeting place to get critical work accomplished.

Taking place Nov. 17-19 in Las Vegas, NV, this premier industry event will feature more than 1,000 exhibitors displaying the latest products and services; nearly 100 business aircraft on static display; and dozens of education sessions to help you operate safely and efficiently.

New for this year is the inaugural, daylong National Safety Forum. To be held on the third and final day of NBAA2015, the forum will bring together top government and industry leaders to discuss the principal safety issues confronting business aircraft operators.

Confirmed opening speakers include NTSB Chairman Christopher Hart and the FAA's Director of Accident Investigation and Prevention Wendell Griffin. Additionally, the day will include presentations by Flight Safety Foundation (FSF) CEO Jon Beatty, International Business Aviation Council (IBAC) Director General Kurt Edwards and members of the NBAA Safety Committee focus teams.

As in past years, NBAA2015 will also feature an impressive array of dynamic speakers. This year's roster includes R. Gil Kerlikowske, commissioner of U.S. Customs and Border Protection (CBP), who will speak during the event's Opening General Session on Nov. 17.



Also speaking at NBAA2015 is retired US Airways Capt. Chesley B. "Sully" Sullenberger III, who will be a featured speaker during the second-day Opening General Session. Sullenberger, along with his first officer, Jeffrey Skiles, effected a remarkable engine-out water landing in the Hudson River on Jan. 15, 2009, that became known as the "Miracle on the Hudson."

NBAA2015 will also offer attendees the chance to explore the ever-increasing potential for small, unmanned aircraft systems (s-UAS) in business aviation. The "Innovation Zone" on the Exhibit Hall floor will feature several examples of s-UAS already utilized in various roles in business aviation, complementing the addition of several new, UAS-focused companies also exhibiting at the Las Vegas Convention Center.

Each day of NBAA2015 will also feature education sessions focused on UAS, including discussions about existing and potential uses of s-UAS in business aviation, and the rapid maturation of "detect and avoid" technology that will eventually enable the safe deployment of larger unmanned systems into the NAS. Unmanned aircraft will also be in focus during Careers in Business Aviation Day on Thursday, Nov. 19 with the session "From Hobby to Career: The Growing Opportunities of Unmanned Aviation."

Whether you're looking to start up a new business aviation operation, or are seeking to enhance your existing fleet, NBAA2015 offers attendees an unparalleled opportunity to explore this dynamic and fast-changing industry. We'll see you in Las Vegas! 

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**Join us at [nbaa.org/join](http://nbaa.org/join).**

## EN ROUTE

### Hartzell Propeller Honors Company Founder at National Aviation Hall of Fame

**H**artzell Propeller Inc. was a co-presenting sponsor of the National Aviation Hall of Fame's 53rd Annual Enshrinement Dinner & Ceremony on October 2, 2015.

This year's inductees included the late Robert N. Hartzell, an early manufacturer of wooden aircraft propellers, later designing lightweight metal propellers that became a catalyst to help develop the general aviation industry. The other co-presenting sponsor was Hartzell Industries, a family-owned trio of companies: Hartzell Air Movement, Hartzell Hardwoods, and Hartzell Veneer Products, which are unaffiliated with Hartzell Propeller.

"Hartzell Propeller is very pleased to honor company founder Robert N. Hartzell's innovative spirit and legacy," said Hartzell Propeller President Joe Brown. "In addition, we are looking forward to celebrating the company's 100th anniversary in 2017 as we carry on his entrepreneurial tradition."

### America's Oscar Night of Aviation

The black-tie gala event, took place in the National Aviation Hall of Fame (NAHF) Learning Center and the adjacent National Museum of the United States Air Force in Dayton, Ohio. Joe Brown and his brother Jim Brown III, co-owners of Hartzell Propeller and parent company Tailwind Technologies Inc., headed a contingent of company representatives at the event.

This year's inductees joined the 225 men and women pioneers so honored since the NAHF's founding in 1962. The four enshrined were:

Brig. Gen Robert L. Cardenas, USAF (Ret) - WWII B-24 combat pilot, test pilot for record-breaking X-plane programs, SE Asia fighter-bomber wing commander, and Air Force Special Ops pioneer.

The late Robert N. Hartzell - early manufacturer of wooden aircraft propellers, who later designed lightweight, controllable metal propellers that helped develop the general aviation industry.

Eugene "Gene" Kranz - Air Force fighter pilot and aeronautical engineer with 37 years in spaceflight operations at NASA, including the Mercury, Gemini, Apollo, Skylab and Shuttle mission programs.

The late Abe Silverstein - NACA aerodynamicist in WWII and early supersonic aircraft developer, later credited at NASA as the architect of the U.S. space program and "The Father of Apollo."



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# EN ROUTE

## Hartzell History

The late Robert N. Hartzell owned a small airplane and did maintenance as a young man. Originally dreaming of being a barnstormer, his father, at his mother's request, urged him to focus on aircraft repair and rebuilding. While repairing airplanes Hartzell noticed a high failure rate with wood propellers.

His friend Orville Wright suggested he use walnut to manufacture propellers. This marked the beginning of Hartzell Walnut Propeller Company in 1917. He built the first propellers using hand axes on walnut logs.

The Hartzell family sold the propeller company to a Fortune 500 company in 1981. Since 1987, Hartzell Propeller Inc. has been owned and operated by the Brown family.

Hartzell Propeller and its sister company, Hartzell Engine Technologies LLC, form the general aviation business unit of Tailwind Technologies Inc. The aerospace technology company also includes Hi-Tech Metal Finishing and Mayday Manufacturing. For more info on Hartzell Propeller go to [hartzellprop.com](http://hartzellprop.com). 

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# EN ROUTE

## FlightSafety Introduces the First Level D Simulator for the Citation Latitude

FlightSafety International announces that training using its first Cessna Citation Latitude Level D simulator has begun in the Wichita Learning Center. FlightSafety's second simulator for the Citation Latitude will be installed at the company's Learning Center in Columbus, Ohio next year.

"We are pleased to offer the most complete range of Cessna aircraft training programs delivered by our team of highly qualified and experienced instructors," said David Davenport, Executive Vice President. "The Citation Latitude training program benefits from FlightSafety's 40 years of experience with Cessna aircraft training and industry-leading advances in simulation and training technology."

The first Citation Latitude simulator is equipped with the Garmin G5000 avionics system and has been qualified to Level D by the Federal Aviation Administration. Qualification by the European Aviation Safety Agency is scheduled to be completed early next year.

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# EN ROUTE



“Building two Citation Latitude full flight simulators demonstrates our long-term commitment to provide our customers with the training programs they require and to deliver industry-leading service and support,” added David Davenport.

The FlightSafety FS1000 simulators for the Citation Latitude are designed to replicate the exact flight and performance characteristics of the aircraft and are equipped

with FlightSafety’s VITAL 1100 visual system. They offer advanced instructional capabilities and are designed for maximum reliability, ease of maintenance and support. The simulators include FlightSafety’s new Instruction Operating Station, designed to provide instructors with a highly-productive and efficient work space. It features an intuitive interface, scalable graphics, and large multi-touch displays. VITAL 1100’s unprecedented fidelity significantly enhances training by providing highly-detailed mission specific-imagery with vastly improved scene content and exceptional environmental effects. Pilots also benefit from photo-realistic imagery up to 40-million-pixel-resolution, and wide field of views designed to enhance training realism.

For additional information, visit [flightsafety.com](http://flightsafety.com). 

## Ad Index

1 <sup>st</sup> Source Bank .....	Inside Back Cover
Air Capitol Dial .....	17
Arizona Type Rating .....	36
ASE, Inc. ....	28
B/E Aerospace, Inc. ....	12
Covington Aircraft Engines .....	39
David Clark Company .....	27
Double M Aviation .....	27
English Field Aviation .....	19
Gogo Business Aviation .....	2
Hartzell Engine .....	19
Hillaero Modification Center .....	16
Jetbed .....	11
L-3 Communications .....	9
LEKTRO, Inc. ....	17
Nashua Flight Simulator .....	16
NBAA .....	31, 35, Back Cover
Northeast Air Inc. ....	37
Pacific Coast Avionics .....	15
Paul Bowen .....	38
Preferred Airparts LLC .....	38
R.C. Avionics .....	16
Raisbeck Engineering .....	20, 21
Rocky Mountain Propellers Inc. ....	18
Select Airparts .....	36
Stevens Aviation .....	5
Theory R Properties .....	10
Turbines, Inc. ....	18
Winner Aviation Inc. ....	37
Wolcott & Associates .....	28
Woodland Aviation .....	13

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by David Miller

## Sea to Shining Sea

I don't often get to travel to both coasts in one week, but this August was different. Transporting my daughter Emily to Long Island for a wedding, and then attending a Citation Jet Pilot's event in Napa one week later, had me pulling out lots of charts in advance. The airways and fixes all looked Greek to me. My first decision was to utilize the services of an experienced traveler, Andre Grosvenor, owner of Aviation Dynamix, for an extra set of eyes on the east coast trip. Andre flew with me and friends to London and knows more about procedures and professionalism than I ever will. It had been over 20 years since I landed near the Big Apple and I just did not feel comfortable going into a dense traffic area totally unfamiliar with the airspace.

Andre joined me and Patty at Addison and we blasted off for a fuel stop in Chattanooga, TN (KCHA). The folks at Wilson Air are outstanding and there is a reason they routinely win the "Best Independent FBO" awards. We were met at the airplane by five line service folks, forced to eat ice cream treats on the ramp, fueled in 15 minutes, and made to feel like kings. And we certainly weren't the most important plane on the ramp. Rumor was that Vice President Biden would be in the next morning. As we taxied out, a huge C-17 landed and rolled out all the way to the end of runway 2. It was Biden's advance team. About a dozen cars with flashing lights followed it down the runway and taxiway in a single line, each spaced evenly from the next. It was quite a sight. It almost made me proud to pay taxes. Turning the behemoth around, however, became a challenge requiring the quick removal of a small stop sign just slightly inside the turning radius of the beast.

As we headed up the east coast, I asked Andre his feelings about flying single-pilot in the northeast. "It's normally not a problem, but lose an AHARS and the autopilot, in weather, and the workload increases dramatically." About five seconds later, we got a total re-route. "N1865 Charlie is now cleared direct Hotel Charlie Mike,



*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, Miller, along with his wife Patty, now own and fly a Citation CJ1+. You can contact David at davidmiller1@sbcglobal.net.*

SAWED intersection, Sierra Whiskey Lima, Sierra India Echo, J-121 Sardi, Charlie Charlie Charlie, direct Islip." What did he say? I was glad I had someone copying the clearance.

Andre mentioned that it is standard practice to monitor 121.5 in the northeast, just in case you traverse a restricted area without a clearance, so that Center has another way to get in touch. Sure enough, we heard Washington Center looking for two VFR pilots who wandered somewhere they shouldn't and almost had F-16's scrambled for one of them. They both had some s'plainin' to do...

All in all, the trip to the "right coast" was easy. It was especially nice to have someone button up the plane, pre-flight, copy clearances, handle the radios, etc. It made my job of herding passengers, finding the freeway, and loading bags all the more bearable.

And I learned a few things along the way from my mentor.

Oh, and the trip to Napa was a breeze. All the support I needed was my trusty co-pilot Patty.

Fly safe.

Photo courtesy of Beechcraft



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