

Countering Complacency

The last front on the **war against pilot error**

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What is the most-complex system on your aircraft? Which system is the most error-prone? If you are flying an airplane built in the last 40 years or so, chances are the answer to both questions is the same: the pilot.

The aviation world has done a marvelous job of improving the reliability of just about every system on the airplane, as is easily seen by our falling accident rates. Systems and procedures have made it

easier for us pilots to be at the top of our game and pilot error rates have fallen dramatically. But pilot errors still exist, and they exist mostly because of complacency.

Merriam-Webster's online dictionary defines complacency as follows:

(1) Self-satisfaction, especially when accompanied by unawareness of actual dangers or deficiencies;

(2) An instance of usually unaware or uninformed self-satisfaction.

When you fly a hollow aluminum tube at eight- or nine-tenths the speed of sound in an atmosphere that will not support life as we know it, it is pretty easy to become self-satisfied. We pilots are prime candidates for complacency and our vulnerability increases with experience, age and professional status.

If you are the chief pilot of a small flight department with more hours than you care to think about and more time in type than the rest of your pilots combined, you



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are at a higher risk of becoming complacent than you might realize.

Every pilot is susceptible, but every pilot can beat complacency with a four-pronged offense:

(1) You must have the discipline to fly “by the book” to take advantage of the safety margins afforded by those manuals and regulations.

(2) You must take advantage of the techniques invented by those who came before you.

(3) You must employ all available resources to fight complacency, and the most readily available resource is your crew.

(4) Finally, you must subject yourself to regular evaluation, and that means more than just your six-month recurrency training.

Discipline

As a professional pilot you can never get away from the books. You need to study to keep up with new equipment, new procedures and new techniques. Even if none of that were to change, you need to study just to keep all that knowledge in your head!

After transitioning to your third or fourth aircraft the learning process becomes routine. It can almost become a mere formality on your way to the next type rating. But just because you are the world’s greatest Piper Navajo pilot it doesn’t mean you know how to land a

Boeing 747. That much is pretty obvious. But what about a pilot transitioning from a medium-size jet to a large jet?

Case Study One: “Poor Aim”

In 2007, a highly qualified and experienced pair of Bombardier Challenger 604 pilots moved up in the world to a Global 5000. In the 604, these pilots had slowly but surely discarded all standard warnings about aiming for “brick one,” the importance of the touchdown zone and the dangers of “ducking under” a safe glidepath. The flat deck angle of the Challenger meant they could get away with it; even if they neglected to flare, their wheels would touch down fairly close to their aim point.

Any aircraft with a higher approach deck angle, like the Global Express, will touch down much earlier than the pilot’s aim point. In the case of the Global 5000, the aircraft will touch down nearly 300 ft. before the pilot’s aim point. Aiming for 500 ft. doesn’t give the pilot enough of a margin for error, as these pilots found out. They touched down just prior to the runway, collapsing the right landing gear and destroying the aircraft.

Whenever you change aircraft, you need to reexamine old techniques and procedures. Flying to a new region of the world? You need to get into the books. Adding a new piece of hardware or software? Back to the books. The learning never stops.

Case Study Two: “Comfort Level”

Pilots in stable, comfortable environments where nothing seems to change face another issue: Complacency erodes

discipline. After a while procedures tend to get shorter, requirements tend to be skipped and life gets easier still. Plotting procedures? We’ve never been lost before! Flight control check? These flight controls have been perfect for years! This attitude is insidious and feeds on itself. Nothing ever seems to go wrong. Until it does.

In 2010, the pilots of PSA Airlines Flight 2495 were chatting comfortably about sports cars while failing to set their flaps to the position needed for takeoff on a 6,300-ft. runway. The captain realized the problem a second or two before V1 and moved the flap handle, generating a litany of bells and warning messages. He initiated an abort above V1 and departed the runway. The Engineered Materials Arresting System (EMAS) spared all aboard from injury.

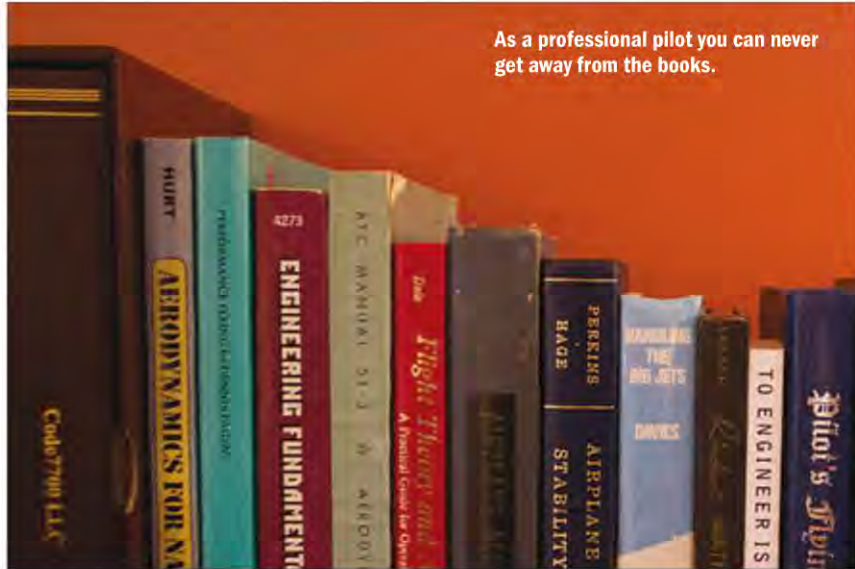


This type of takeoff configuration mishap seems to happen every few years and many of these have much more dire consequences. In 2008, 154 of 172 people on board died when Spanair Flight 5022 attempted to take off from Madrid-Barajas, Spain. In August 1987, all but one of the 155 passengers and crew on board perished when Northwest Airlines Flight 255 crashed on takeoff from Detroit Metropolitan Airport.

Consider your ATP your doctorate in aviation. Just as a doctor is expected to keep up with the profession, so, too, a pilot should always be in the “learn mode.”

Techniques

In aviation someone is always inventing a better mousetrap, to be sure. But sometimes the breakthrough is in technique.



You must open your mind to new ways of doing things. More importantly, when adopting a technique you need to understand it fully.

Case Study Three: “Popsicle Sticks”

The only hull loss in the “Classic” Gulfstream GV series happened following maintenance. A mechanic used wooden sticks to place the weight on wheels (WOW) system into “ground mode” while the airplane was on jacks. He forgot to remove them and the crew missed them on the external preflight; as a result the gear did not retract after takeoff. The crew returned for landing and either left the automatic ground spoilers armed or armed them, against flight manual procedure. The spoilers popped up at 57 ft. and the airplane crashed down.

Those pilots made a lot of mistakes on the way to the scene of the accident, but a well-known technique could have saved them. Gulfstream V series aircraft have four WOW indications — one for each wheel strut and a fourth that compares everything it knows to data from the radio altimeter and speed sensors. If the comparator thinks the airplane is in the air and the main gear WOWs think the airplane is on the ground, it lets the pilots know there is a dispute. GV series pilots have adopted “Three green, four in the air,” meaning the four WOW sensors all agree the airplane is airborne, prior to activating the automatic ground spoilers. Had these pilots adopted and understood this technique, the accident would have been avoided.

In most professions learning from

one’s mistakes is a good thing and reason for continued employment and even advancement. In aviation, however, it is far better to learn from the mistakes of others. Many techniques are born from the mistakes of others, near misses or somebody with a lot more experience living “on the edge.” Be careful not to turn the technique into a rote callout that doesn’t require any thought. Still, calling out, “Three green, one in the air, three in ground mode, ground spoilers armed” would have been no better than no technique at all.

The best tool to avoid complacency is a sharp pilot in the other seat who is willing to speak up, keeping you at your best. No pilot is perfect and no pilot is at the 100% level of performance 100% of the time. That’s why most transport category aircraft have two pilots. If one pilot shuts the other pilot down with open hostility, dismissive comments, or even just the “cold shoulder,” that pilot might as well be flying solo.

Case Study Four: “That Ain’t Right”

Even a friendly, easygoing captain can shut down a cockpit crewmember dismissively when that crewmember has the right answer. In January 1982, the captain of Air Florida Flight 90 made several critical mistakes on the way to crashing his Boeing 737 during a takeoff from Washington’s National Airport, but his lesser-experienced first officer had deferred on each bad decision until the last. The junior pilot had an instinctual feeling the engines were not set correctly. The captain amiably dismissed these meekly offered protests and the





an opportunity to do this. Invite an outside review from a Safety Management System vendor or even a fellow pilot from the next hangar down. Having a third set of eyes watching you can illuminate anything wrong to which you have grown accustomed.

► Install a Flight Operations Quality Assurance (FOQA) system. This takes the same inputs used by your flight data recorder and reports back when things aren't right. If your approach isn't stable or your landings are a bit long, FOQA will see it and will let you know. Don't look at each report as an opportunity to mete out punishment but as a chance to offer course corrections. Even to yourself.

One Pilot's Story

As the chief pilot of a small flight department with very

rest is aviation history. Good ideas should be acted upon and the proponent should be thanked: "Yes, another 5,000 lb. of fuel is a great idea in this kind of weather!"

Even those ideas worthy of consideration but not utilized can be praised. From the left seat: "I think extra fuel with this weather is a good idea normally, but considering the short runway at our destination and the fact we have several alternates we should stick with the fuel we've got. But your thought process is exactly right, we should always consider adding fuel in case we have to divert around weather."

Even bad ideas can be treated with respect. For example, "Shemya used to be a great alternate, but they no longer have services to handle jets like ours. Are there any others?"

A truly professional pilot invites outside critique, knowing his or her performance can withstand the scrutiny but can always be improved. A complacent pilot isn't complacent by choice, but by habit. How does a pilot know he or she has over time started skipping critical safety steps unless there is an outside observer willing to say so?

Case Study Five: "Aggressive"

Some aircraft manufacturers have hired junior pilots with little or no formal test-pilot training as "test pilots." And some

of these aviators were surrounded by similarly experienced pilots with very little oversight and a fertile soil for complacency. In 2000, a Challenger 604 was destroyed by a test pilot's improper, overly aggressive takeoff rotation. The NTSB found many of the company's test and management pilots were using the same takeoff technique, which was more than double the 3-degree-second rate specified by their own training manuals. Any Challenger 604 line pilot could have spotted the problem after one takeoff, but the accident pilots did not have the feedback they needed. Perfection is unobtainable, of course, but improvement is always within our grasp.

► Critique your own performance publicly, but positively: "I ended up a little tight on downwind; perhaps I should have allowed more drift for the wind." Offer critiques of others in the same positive light: "I guess the winds at pattern altitude were not the same as tower winds; perhaps we could have increased our drift angle."

► Getting a check ride in the simulator might be a good start, but having an outsider with a pen and a pad of paper in the jump seat while you are flying your passengers is quite a different experience. Even if you aren't flying an FAR Part 121 or 135 operation where such things are required, you should create

good pilots I have the handicap of being the pilot with the longest resume of flight experience, jet time, military experience and time in type. All that is a handicap actually because I may not get the critiques I need unless I solicit them.

A few years ago we added the capability of flying Localizer Performance with Vertical Guidance (LPV) approaches, something I had never seen before. I had to defer to a younger pilot with LPV experience and become the student.

There was a time when my tolerance for the centerline on landing had inexplicably expanded. Fortunately, I had a younger pilot willing to speak up and offer me the course correction I needed. Finally, we all revert to our past experiences and I am no exception. Growing up with a military "brick one" mentality means I never land long, but I have been known to "duck under" now and then. FOQA has stopped that; I am almost always in the touchdown zone these days.

If an old dog like me can learn new tricks, so can you. I've known more than my share of pilots who lost their edges somewhere along the road to retirement. Their peers were counting the days! I've also known more than a few who ended their long and distinguished careers at the top of their game. We wished they had never left. I know which category of career I am shooting for. How about you? **B&CA**