The Normalization

There's real danger when **arrogance, complacency or deviance** enter the flight deck

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A Hawker 800 deviating from 14 CFR 91.303 with an aerobatic flight over the 2017 NBAA exhibits at Las Vegas Henderson Executive Airport (KHND) Nevada

The May 31, 2014, crash of a Gulfstream IV at Hanscom Field (KBED), Bedford, Massachusetts, was a call to action for many in business aviation. We, as a community of aviators, were shocked and outraged at just how unprofessional some in our ranks could be, even those of us flying top-of-the-line equipment. These pilots threw out the book and came up tragically short.

It would be too simplistic to say the crash was caused because the crew neglected to disengage their flight control gust lock prior to takeoff. They would have remembered the gust lock had they simply run the Before Starting Engines checklist mandated by their Airplane Flight Manual (AFM). Even failing this step, they could have caught their error had they conducted the flight control check required by their After Starting Engines checklist.

From their taxi out to their takeoff, they had multiple cues prior to decision speed that cried out "Abort!" And even after all that, they could have survived the rejected takeoff had they completed that maneuver in accordance with the manufacturer's specified procedure. But they did none of those things and were killed, along with the flight attendant and their four passengers, as a result.

So, here we are, almost four years later, and what has changed? That accident caused magazine articles to be written, symposiums to be conducted, industry studies to be commissioned and simulator profiles to be added to initial and recurrent training sessions. Perhaps we've also expanded the aviator's lexicon. The NTSB pulled no punches when citing the crew for "intentional, habitual noncompliance." But these labels are nothing new.

Nearly a decade before the accident, David Huntzinger, Ph.D. in safety, coined the term "procedural intentional noncompliance" in a feature article for this publication (see "In the PINC," January 2006, page 42). A decade before that, Columbia University Prof. Diane Vaughan, Ph.D. in sociology, used the term "the normalization of deviance" to describe the culture at NASA when incrementally waiving one rule after another on the way to approving the ill-fated launch of the space shuttle Challenger in 1986.

Our challenge, then, has been to attack the normalization of deviance as an accepted habit among professional aviators. It seems many of us have fooled ourselves into thinking we are having an impact because of the sheer magnitude of our efforts. I, too, have been guilty of this delusion. After

A Hawker 800 nose gear starting to retract even though the main gear is still on the runway, seconds before its aerobatic flight

# of Compliance

having written "The Normalization of Deviance" in this magazine, (January 2017, page 40), and spoken publicly to several forums, I continue to be shocked when presented with evidence that our efforts are not reaching the intended audience.

A year after the NTSB published its findings about the Bedford accident, I was seated in my Gulfstream G450 parked behind a Gulfstream G550 waiting for its passengers. When the other aircraft's passengers arrived, I watched as the rotating beacon came to life and the crew began its Before Starting Engines checklist, which is virtually identical to that of my aircraft. The aircraft began to taxi sooner than I thought possible, and the pilot seated to my right gave voice to my own thoughts, "What about the flight control check?" We watched in dismay as the aircraft taxied to the end of the runway, still in our clear view. They added thrust and rotated just where they needed to, all without once exercising their flight controls as required by their AFM. "I guess some pilots never get the word," I said.

The author wearing and using oxygen aboard a Gulfstream G450

JAMES ALBRIGHT

A year later I had forgotten about these acts of intentional noncompliance as I attended the 2017 NBAA annual convention in Las Vegas. I tried to spend as much time as possible at the aircraft static displays, which were held at Henderson Executive Airport (KHND). An anonymous photographer sent me a series of photos clearly showing a Hawker 800 taking off from Henderson with its landing gear retracting abnormally, with the nose beginning its retraction while the main gear was still on the runway. Moments later, the aircraft was flying directly overhead the static displays at what appeared to be 80 deg. of bank.

While the aircraft's paint scheme appears to be from a reputable charter management company, the aircraft was actually sold earlier in the year to a private company. I circulated the series of photos among Hawker experts and asked, "How can you get the gear to behave this way?" Each responded that the only way would be to begin the takeoff roll with the landing gear handle in the up position. My next question was, "Why would you do that?" Each answered, "I wouldn't."

It appears that deviance is the norm among some pilots flying very advanced (and expensive) aircraft. To them, standard operating procedures (SOPs) are for "the other guy." Having witnessed many pilots make the journey from compliance with the SOPs to deviance, I know the road to the latter is paved with good intentions. The SOPs are sometimes wrong or too hard to follow. And since no SOP can cover every situation, we are often forced to deviate. But even if the SOPs are well written, we may be inclined to conclude that they were written for lesser aviators, the so-called "lowest common denominator."

No matter the cause of the first deviation, once you've strayed the first time the second becomes easier. And then the third. This is the classic slippery slope. Fortunately, each problem suggests its own solution.

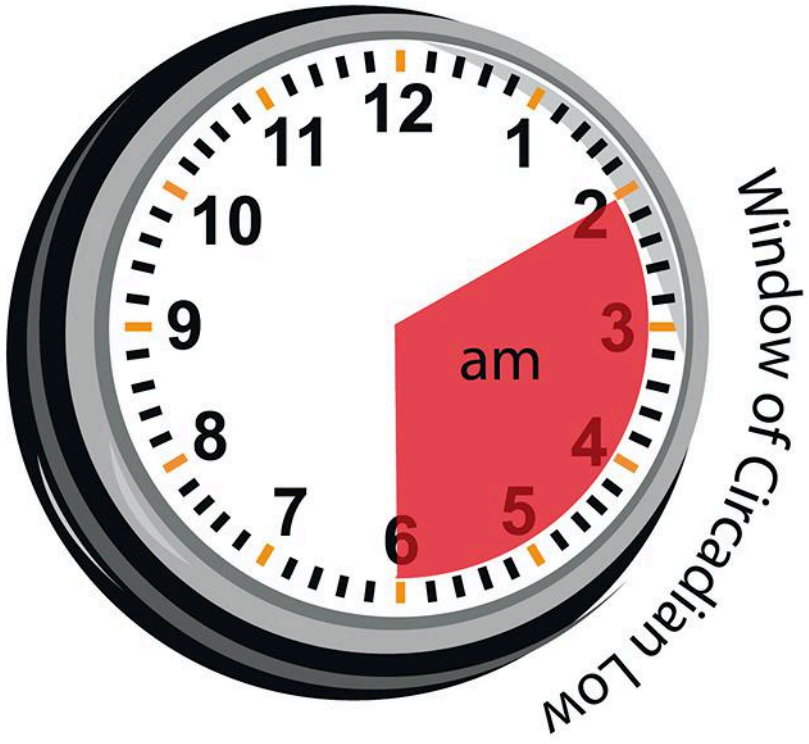
The SOPs Are too Hard to Follow

The classic first step to normalizing deviance from SOPs begins with 14 CFR 91.211, oxygen rules. They state that when flying an aircraft with a pressurized cabin above 41,000 ft., one pilot must wear and use an oxygen mask. And when higher than 35,000 ft., if one pilot leaves the controls, the other must wear and use an oxygen mask. If you are flying commercially, those altitudes decrease. It is a tired saying among pilots of high-altitude jets: "Nobody follows that rule." I know for a fact that statement is false; it would be more correct to say, "Few pilots follow that rule." If you are among those pilots who choose to disdain from donning the ox mask, you have made a conscious decision to deviate.

Arguments against using the mask — arguments against compliance — include the fact that there have been no known cases of a sudden decompression during which wearing a mask under these SOPs would have prevented an accident. Furthermore, the masks are uncomfortable and can actually increase pilot fatigue. Finally, while aviation oxygen is pure, aviation oxygen equipment isn't sterilized prior to every use. We

don't know if there are long-term medical impacts from breathing pure oxygen from unsterilized equipment for prolonged periods. It is easy to talk yourself out of using the masks.

So, if you've made the conscious decision to deviate from 14 CFR 91.211 you may be on your way to further deviations. But there could be a way to adapt your procedures to prevent the deviation in the first place. Here's what we've done in my Gulfstream G450 flight department: We plan all trips to fly no higher than 41,000 ft. If one pilot leaves the cockpit when cruising above 35,000 ft., the other wears and uses oxygen. If weather, performance or other operational requirements dictate higher altitudes, we take turns wearing the mask. A normal flight profile rarely takes advantage of the higher altitudes, but when it does the lower altitude costs us about 250 lb. of fuel an hour, about what our auxiliary power unit consumes. I can live with that. But what about those SOPs you can't live with?



The SOPs Can't Handle Every Situation

The classic SOPs that often need bending are those dealing with duty limits. Imagine yourself waiting for your passengers for the return home only to be delayed when their meeting runs long. You've burned into your legal duty time and flying home puts you an hour over the limit. If your rules and regulations are unbending, you will be forced to call it a day, spend minimum time in a last-minute hotel and have to do everything all over again the next day, when perhaps you're even more tired. You may be tempted to "look the other way" and decide the extra hour isn't a problem. If your SOPs didn't allow this, you're again descending that slippery slope.

If, on the other hand, your SOPs include a waiver process, you might be able to implement the common-sense solution without incurring a deviation. If you are flying commercially you might not have this option. But if you are self-managed or can influence your management company, you might have options you didn't know about. In my company, managed in-house, we wrote in a waiver system that allowed limited flexibility provided both pilots on the trip and the director of aviation or standards agree.

But what good is an SOP you can easily waive? Won't that rob crews of the protection provided by the SOPs? By formalizing the waiver process, you can start recordkeeping and track the effectiveness of these waivers. Letting the passengers know the trip is made possible with a waiver educates them about the limits and may have an impact on future needs for going beyond the written SOP.

We learned this lesson in the early days of our flight department: To be effective, SOP waivers should be rare. We once planned an 11-hr. duty day that involved two flights, flying one set of passengers from Palm Beach International Airport (KPBI) in Florida to Hanscom Field (KBED), and a second set from Hanscom to San Francisco International Airport (KSFO). The first passengers arrived 3 hr. late and the winds further delayed our arrival at the first destination another 30 min. We decided to waive the 14.5-hr. duty day, which was only 30 min. over our limit. Arriving into San Francisco at midnight didn't seem so bad until we realized our body clocks were actually still on East Coast time, which was 3 a.m.

Our Fatigue Risk Management Working Group studied the Window of Circadian Low (WOCL) and instructed the rest of the flight department about the hazards of flying between the hours of 2 a.m. and 6 a.m. Our minds are not as sharp, we aren't as alert, and our skills as crewmembers are degraded. We changed our SOPs to reduce our duty limits from 14 hr. to 12 hr. when the flight crosses the WOCL.

The waiver process allowed us to learn these lessons within the framework of our SOPs while educating our passengers about the need to pay closer attention to duty limits. As the years have passed, our need to implement duty limits has virtually disappeared. We now rarely schedule trips that come close to these limits. There are other SOPs that seemed appropriate when we wrote them but have not withstood the test of time. And for these, our Safety Management System (SMS) has made a difference.

As a self-managed department, we have the great advantage of writing many of our SOPs. Having those procedures vetted by a robust SMS auditor ensures those procedures are well thought out. For our first edition, our rules forbade circling at night. Of course we thought this was the conservative, safer approach.

Hanscom, our home airport, rarely presents the need to circle at night, but the first time it did, we ended up diverting to Logan International Airport (KBOS) in Boston, just 10 min. away. The need to circle happened at the last minute and the diversion was almost as hectic as a missed approach at instrument minimums. After we landed we realized circling would have been the safer option. We filled out an SMS Continuous Improvement Opportunity

form and searched for better options. In the end, we amended our SOP to allow circling at night at our most frequently used airports so long as the weather was at least at VFR minimums.

In each case — be it a waiver or a change to SOPs — we were tempted to ignore the SOP because our pilots are highly experienced, both in time in type and total time. We could have been forgiven for thinking the SOPs were written for "the other guy," someone with less experience than us. But in the end, we decided that we aren't so special after all.

The SOPs Are Designed for Those With Less Experience (or Ability)

Few pilots will dispute the fact that a high level of experience places them at greater risk of complacency. But many of these same pilots will argue against the notion that complacency makes them less cautious or less careful than pilots with less experience. But that is exactly what complacency does, it erodes caution and care. Knowing that, highly experienced aviators need to be especially attuned to the corrosive impact of complacency.

There is no doubt that a well-designed SOP serves as a teaching tool for the inexperienced aviator until the procedure becomes almost automatic. But as experience grows, the importance of the SOP also grows to keep the seasoned pilot from developing bad habits.

In the case of the 2014 Bedford Gulfstream crash, for example, the Before Starting Engines and After Starting Engines checklists all included crucial items to ensure the aircraft's flight controls were free to move without the restriction of the gust lock. These checklists help guide pilots new to the Gulfstream IV to accurately and quickly accomplish all required steps prior to takeoff. As these pilots gain experience, they will naturally start to memorize each step and may be able to accomplish each checklist flawlessly without referring to them. The problem, however, is that fatigue, distractions and checklist changes will render the memorized checklist flawed. Over a prolonged period, the seasoned pilot may begin to omit steps he or she no longer considers valuable. But how can a pilot make these decisions and override the aircraft manufacturer's best judgment? To do so is a sign of aviator arrogance; these pilots have unchecked egos.

The Ego Factor, a Common Denominator

An aviator who decides an SOP is too hard to follow, doesn't apply to a particular situation, or is meant for "lesser aviators" is exhibiting signs of arrogance that place their fellow crewmembers, passengers and aircraft at risk. They are not only saying "I know better than everyone who has come before me," they are also saying "I am better." This trait is never worse than with pilots who decide to exhibit their aviation prowess for an audience, even an unsuspecting audience.

The Hawker pilots who put on an air show for the exhibition crowd at Henderson Executive Airport, for example, wanted the bragging rights: "Guess what we did!" Of course, they are untrained air show pilots. I know that because if they had the requisite training, they would have realized the risks of their near-knife-edge turn were unacceptably high. They were, in short, Thunderbird wannabes.

I think these types of pilots should take a page from another military aerial demonstration team, the U.S. Navy's Blue Angels. After each flight, each Blue Angel critiques his or her own performance and holds no punches. The pilot then concludes the critique with the phrase, "Glad to be here." They are paying tribute to their fellow naval aviators who are out on deployment, managing real risks under much more hazardous conditions. The Blue Angels are exhibiting two of the finest attributes of professional aviators: humility and gratitude.

Make Compliance the Norm

No matter what your training, skills or experience level, you can aspire to Blue Angel levels of humility and gratitude. We should all humbly admit that we don't know it all, we can't fly our aircraft beyond its limits or ours, and we need to strictly follow SOPs to avoid succumbing to the normalization of deviance. We should also seek to display similar levels of gratitude. We professional aviators get paid to fly top of the line equipment that would have been considered borderline science fiction only a few years ago. A Hawker 800, for example, can outperform just about anything flying just a few generations ago. It ought to be enough of a thrill to do that by the book.

Flying "by the book" doesn't make you a perfect aviator; rather, it makes you an aviator seeking perfection while learning from mistakes. When compliance with standard operating procedures is your normal behavior, then occasional deviations are truly anomalies that can be attacked, solved and eliminated. **BCA**

U.S. NAVY

The U.S. Navy Blue Angels