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Bedford and the Normalization of Deviance

by Ron Rapp (<http://www.rapp.org/archives/author/ronrapp/>) on December 20, 2015 (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/>) in Opinion Leaders (<http://www.rapp.org/archives/category/aviation/opinion-leaders/>) • 54 Comments (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/#comments>)

Like many pilots, I read accident reports all the time. This may seem morbid to people outside “the biz”, but those of us on the inside know that learning what went wrong is an important step in avoiding the fate suffered by those aviators. And after fifteen years in the flying business, the NTSB’s recently-released report (<http://www.nts.gov/investigations/AccidentReports/Reports/AAR1503.pdf>) on the 2014 Gulfstream IV (https://en.wikipedia.org/wiki/Gulfstream_IV) crash in Bedford, Massachusetts is one of the most disturbing I’ve ever laid eyes on.

If you’re not familiar with the accident, it’s quite simple to explain: the highly experienced crew of a Gulfstream IV-SP attempted to takeoff with the gust lock (http://code7700.com/g450_gust_lock.html) (often referred to as a “control lock”) engaged. The aircraft exited the end of the runway and broke apart when it encountered a steep culvert. The ensuing fire killed all aboard.

Sounds pretty open-and shut, doesn’t it? There have been dozens of accidents caused by the flight crew’s failure to remove the gust/control lock prior to flight. Professional test pilots have done it on multiple occasions, ranging from the prototype B-17 bomber (http://code7700.com/checklist_philosophy.html) in 1935 to the DHC-4 Caribou (<https://www.youtube.com/watch?v=oH5hs0B5Oks>) in 1992. But in this case, the NTSB report details a long series of actions and habitual behaviors which are so far beyond the pale that they defy the standard description of “pilot error”.

Just the Facts

Let me summarize the ten most pertinent errors and omissions of this incident for you:

1. There are *five* checklists which must be run prior to flying. The pilots ran none of them. CVR

- data and pilot interviews revealed that checklists simply were not used. This was not an anomaly, it was standard operating procedure for them.
2. Obviously the gust lock was not removed prior to flying. This is a very big, very visible, bright red handle which sticks up vertically right between the throttles and the flap handle. As the Simon & Chabris selective attention test (<https://www.youtube.com/watch?v=vJG698U2Mvo>) demonstrates, it's not necessarily hard to miss the gust lock handle protruding six inches above the rest of the center pedestal. But it's also the precise reason we have checklists and procedures in the first place.
 3. Flight control checks were not performed on this flight, nor were they *ever* performed. Hundreds of flights worth of data from the FDR and pilot interviews confirm it.
 4. The crew received a Rudder Limit message indicating that the rudder's load limiter had activated. This is abnormal. The crew saw the alert. We know this because it was verbalized. Action taken? None.
 5. The Pilot Flying (PF) was unable to push the power levers far enough forward to achieve takeoff thrust. Worse, he actually verbalized that he wasn't able to get full power, yet continued the takeoff anyway.
 6. The Pilot Not Flying (PNF) was supposed to monitor the engines and verbally call out when takeoff power was set. He failed to perform this task.
 7. Aerodynamics naturally move the elevator up (and therefore the control column aft) as the airplane accelerates. Gulfstream pilots are trained to look for this. It didn't happen, and it wasn't caught by either pilot.
 8. The Pilot Flying realized the gust lock was engaged, and said so verbally several times. At this point, the aircraft was traveling 128 knots had used 3,100 feet of runway; about 5,000 feet remained. In other words, they had *plenty* of time to abort the takeoff. They chose to continue anyway.
 9. One of the pilots pulled the flight power shutoff handle to remove hydraulic pressure from the flight controls in an attempt to release the gust lock while accelerating down the runway. The FPSOV was not designed for this purpose, and you won't find any G-IV manual advocating this procedure. Because it doesn't work.
 10. By the time they realized it wouldn't work and began the abort attempt, it was too late. The aircraft was traveling at 162 knots (186 mph!) and only about 2,700 feet of pavement remained. The hydraulically-actuated ground spoilers — which greatly aid in stopping the aircraft by placing most of its weight back on the wheels to increase rolling resistance and braking efficiency — were no longer available because the crew had removed hydraulic power to the flight controls.

Industry Responses

Gulfstream has been sued by the victim's families. Attorneys claim that the gust lock was defective, and that this is the primary reason for the crash. False. The gust lock is designed to prevent damage to the flight controls from wind gusts. It does that job admirably. It also prevents application of full takeoff power, but the fact that the pilot was able to physically push the power levers so far forward simply illustrates that anything can be broken if you put enough muscle into

it.

The throttle portion of the gust lock may have failed to meet a technical certification requirement, but it was not the cause of the accident. The responsibility for ensuring the gust lock is disengaged prior to takeoff lies with the pilots, not the manufacturer of the airplane.

Gulfstream pilot and Code7700

(<http://www.code7700.com/>) author James Albright calls the crash involuntary manslaughter. I agree. This wasn't a normal accident chain. The pilots knew what was wrong while there was still plenty of time to stop it. They had all the facts you and I have today. They chose to continue anyway. It's the most inexplicable thing I've yet seen a professional pilot do, and I've seen a lot of crazy things. If locked flight controls don't prompt a takeoff abort, nothing will.

Albright's analysis (http://code7700.com/case_study_bedford.html) is outstanding: direct and factual. I predict there will be no shortage of articles and opinions on this accident. It will be pointed to and discussed for years as a bright, shining example of how not to operate an aircraft.

In response (<http://www.ainonline.com/aviation-news/blogs/torqued-gulfstream-iv-crash-corporate-aviations-wakeup-call>) to the crash, former NTSB member John Goglia has called for video cameras in the cockpit, with footage to be regularly reviewed to ensure pilots are completing checklists. Despite the good intentions, this proposal would not achieve the desired end. Pilots already work in the presence of cockpit voice recorders, flight data recorders, ATC communication recording, radar data recording, and more. If a pilot needs to be videotaped too, I'd respectfully suggest that this person should be relieved of duty. No, the problem here is not going to be solved by hauling Big Brother further into the cockpit.

A better model would be that of the FOQA program (https://www.faa.gov/about/initiatives/atos/air_carrier/foqa/), where information from flight data recorders is downloaded and analyzed periodically in a no-hazard environment. The pilots, the company, and the FAA each get something valuable. It's less stick, more carrot. I would also add that this sort of program is in keeping with the Fed's recent emphasis on compliance over enforcement action.

The Normalization of Deviance

What I, and probably you, are most interested in is determining how well-respected, experienced, and accomplished pilots who've been through the best training the industry has to offer reached the point where their performance is so bad that a CFI wouldn't accept it from a primary student on their very first flight.

After reading through the litany of errors and malfeasance present in this accident report, it's tempting to brush the whole thing off and say "this could never happen to me". I sincerely believe



(<http://www.rapp.org/wp-content/uploads/gust-lock.jpg>)

Gulfstream IV gust lock (the red handle, shown here in the engaged position)

doing so would be a grave mistake. It absolutely can happen to any of us, just as it has to plenty of well-trained, experienced, intelligent pilots. Test pilots. People who are much better than you or I will ever be.

But how? Clearly the Bedford pilots were *capable* of following proper procedures, and did so at carefully selected times: at recurrent training events, during IS-BAO audits, on checkrides, and various other occasions.

Goglia, Albright, the NTSB, and others are focusing on “complacency” as a root cause, but I believe there might be a more detailed explanation. The true accident chain on this crash formed over a long, long period of time — decades, most likely — through a process known as the normalization of deviance (https://en.wikibooks.org/wiki/Professionalism/Diane_Vaughan_and_the_normalization_of_deviance).

Social normalization of deviance means that people within the organization become so much accustomed to a deviant behavior that they don't consider it as deviant, despite the fact that they far exceed their own rules for the elementary safety. People grow more accustomed to the deviant behavior the more it occurs. To people outside of the organization, the activities seem deviant; however, people within the organization do not recognize the deviance because it is seen as a normal occurrence. In *hindsight*, people within the organization realize that their seemingly normal behavior was deviant.

This concept was developed by sociologist and Columbia University professor Diane Vaughan (<http://sociology.columbia.edu/node/180>) after the Challenger explosion. NASA fell victim to it in 1986 (https://en.wikipedia.org/wiki/Space_Shuttle_Challenger_disaster), and then got hit again when the Columbia disaster (https://en.wikipedia.org/wiki/Space_Shuttle_Columbia_disaster) occurred in 2003. If *they* couldn't escape its clutches, you might wonder what hope we have. Well, for one thing, spaceflight in general and the shuttle program in particular are specialized, experimental types of flying. They demand acceptance of a far higher risk profile than corporate, charter, and private aviation.

I believe the first step in avoiding “normalization of deviance” is awareness, just as admitting you have a problem is the first step in recovery from substance addiction. After all, if you can't detect the presence of a problem, how can you possibly fix it?

There are several factors (https://en.wikibooks.org/wiki/Professionalism/Diane_Vaughan_and_the_normalization_of_deviance) which tend to sprout normalization of deviance:

- First and foremost is the attitude that rules are stupid and/or inefficient. Pilots, who tend to be independent Type A personalities anyway, often develop shortcuts or workarounds when the checklist, regulation, training, or professional standard seems inefficient. Example: the boss in on board and we can't sit here for several minutes running checklists; I did a cockpit

flow, so let's just get going!

- Sometimes pilots learn a deviation without realizing it. Formalized training only covers part of what an aviator needs to know to fly in the real world. The rest comes from senior pilots, training captains, and tribal knowledge. What's taught is not always correct.
- Often, the internal justification for cognizant rule breaking includes the "good" of the company or customer, often where the rule or standard is perceived as counterproductive. In the case of corporate or charter flying, it's the argument that the passenger shouldn't have to (or doesn't want to) wait. I've seen examples of pilots starting engines while the passengers are still boarding, or while the copilot is still loading luggage. Are we at war? Under threat of physical attack? Is there some reason a 2 minute delay is going to cause the world to stop turning?
- The last step in the process is silence. Co-workers are afraid to speak up, and understandably so. The cockpit is already a small place. It gets a lot smaller when disagreements start to brew between crew members. In the case of contract pilots, it may result in the loss of a regular customer. Unfortunately, the likelihood that rule violations will become normalized increases if those who see them refuse to intervene.

The normalization of deviance can be stopped, but doing so is neither easy or comfortable. It requires a willingness to confront such deviance when it is seen, lest it metastasize to the point we read about in the Bedford NTSB report. It also requires buy-in from pilots on the procedures and training they receive. When those things are viewed as "checking a box" rather than *bona fide* safety elements, it becomes natural to downplay their importance.

Many of you know I am not exactly a fan of the Part 121 airline scene, but it's hard to argue with the success airlines have had in this area. When I flew for Dynamic Aviation's California Medfly (<http://www.rapp.org/archives/2009/03/a-day-at-medfly/>) operation here in Southern California, procedures and checklists were followed with that level of precision and dedication. As a result, the CMF program has logged several decades of safe operation despite the high-risk nature of the job.

Whether you're flying friends & family, pallets of cargo, or the general public, we all have the same basic goal, to aviate without ending up in an embarrassing NTSB report whose facts leave no doubt about how badly we screwed up. The normalization of deviance is like corrosion: an insidious, ever-present, naturally-occurring enemy which will weaken and eventually destroy us. If we let it.

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Frank

December 21, 2015 at 6:44 am

Well done.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118030#respond>)



Congo Gold Captive (<http://rapp.com>)

December 24, 2015 at 10:38 am

15,450,550 flew with the cocaptain 18 years ago. He was a person that let people walk all over him. The Captain was a tyrant. They were not well respected. That's the recipe for disaster. Most well respected Gulfstream pilots know they have reached the pinnacle of private aviation and act accordingly. This is a slap in the face to their training company. Any well networked Gman knows someone who knows someone in the Gulfstream world. The tyrants

are being weeded out, by hook or by crook. It's criminal negligence, just like the Avjet crash decision in ASE. Merry Christmas
6000+ hrs in G2,3,4,5,450,550

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118083#respond>)



Eric Jaderborg

December 21, 2015 at 9:30 am

Ron,

That's an excellent analysis of the problem, and a good beginning for discussion. Except for your suggestion to use CVR and DFDR recordings for post-flight analysis in a "safe space," however—which is a great idea, by the way—the overall solution seems to come down to, "we all need to stiffen our spines and do better." Look, if our individual professional attention to airmanship were ever going to improve on its own, it would have by now. Certainly, there are developments over the years that have improved overall attention to "best practices": better and more frequent training and more (but far from perfect) attention to issues such as fatigue and human factors, to name just two. But it's not enough. And it's not enough just to admonish everyone to "wise up"—no matter how eloquent the admonishment.

Slowly—some say too slowly—and with the not-so-subtle "assistance" of ICAO, which has basically crammed this down our collective throat, the FAA has embraced the concept of Safety Management Systems (SMS) in commercial maintenance and flight operations. The aviation community—or some of its regulators, at least—have begun to recognize that avoiding the "normalization of deviance" is not just the job of a few people in the cockpit but also the job of an entire organization—from the top down. By 2018, organizations governed under Part 121 will be required to adopt a formal SMS process, and not just because it's a good idea, but because in the not-so-distant future landing rights in the EU and elsewhere will depend upon having such a program in place. It's already required in Bermuda.

Step One in the SMS program development process is to get "buy in" from the top brass of the organization. Real "buy in," however, is more easily obtained on paper than in reality. And if the whole push toward SMS were to fail, this is where the fatal fracture will occur. The problem of "normalization of deviance" will never be solved until the bosses in the back place the same faith in the Director of Operations, the Chief Pilot, and every pilot-in-command that they do in the Chief Financial Officer and the Chief Information Officer, and the minions who count beans and electrons for a living. It isn't going to work unless CEOs support professional judgment and behavior in the flight department (even at the expense of the schedule), and create a "just culture" in which communication of safety issues is encouraged rather than suppressed.

But how? Corporate executives primarily respond to profits, not morality or safety. Most of them don't understand safety practices any more than they

understand what makes a computer work. A former WalMart Chief Pilot once told me that the great Sam Walton himself once told him that truck drivers were more valuable than pilots because truck drivers carry product and pilots do not. If correctly quoted, it's an utterly immoral statement of breathtaking ignorance that epitomizes the attitude of the average corporate boss. (No, Mr. Walton, pilots don't carry product. They carry decision-makers. They carry the lives of the people who make an organization work, including your own family.) The only way to ensure corporate buy-in to a genuine culture of compliance is to make it profitable to do so, and painful and expensive not to do so.

Denying international landing rights to companies that don't have an approved—and proven—SMS program is one place to start. Expanding the requirement for an approved SMS program beyond Part 121, into Parts 135 and 91K—even into corporate flight departments beyond a certain size and complexity—is another idea worth considering. Still another (and one that I admit would meet with fierce resistance) would be to create and require a separate level of certification for people who occupy required management positions, such as Director of Safety, Director of Operations, and Chief Pilot. The public, through its government, demands that pilots prove that they know what they are doing—at least to some minimal standard. The public also has a right to demand that the managers of large, complex flight operations also know what they are doing. I'm talking about a certificate—a license—with levels and ratings that go far beyond the current regulatory requirements for those positions, and that would be subject to training and examination requirements, FAA surveillance (in addition to the normal surveillance done on air carrier operations), currency requirements, and if necessary, enforcement action up to and including revocation. A corporate or air carrier flight department manager's personal job and livelihood should be just as much on the line for careless or reckless operations as anyone in the cockpit.

None of these suggestions—separately or collectively—would be a silver bullet. Regulation isn't the answer to everything—and I would never suggest that it is. But what good and effective regulation does do is bring the errant knave into the tent, to be forced into a community that has a mutually created and accepted set of morés and an overall culture of compliance. The rogue behavior of the non-compliant has always been there, and always will be there, but it is minimized when the rogue is part of a community that looks upon him (or her) with disdain—even disgust.

There will never be a substitute for good, old-fashioned professionalism and integrity. Ultimate responsibility for the safety of planes and passengers is, always has, and (I hope) always will reside in the cockpit in the capable hands of real human beings who actually put those hands on the controls, and their lives on the line. But we long ago left behind the "good old days" of open cockpit airmail and tough guys going it alone, and with little support. It's time for whole organizations that support flight operations to be dragged to the table—kicking and screaming, if necessary—and made to sit there until they eat their vegetables.

Regards,

Eric Jaderborg

[Reply \(http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118031#respond\)](http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118031#respond)**Ron Rapp** (<http://www.rapp.org/>)*December 21, 2015 at 11:30 am*

Good stuff, Eric. I hadn't heard that one about Sam Walton. If I may play devil's advocate: in his defense, Walton was active in business between the mid 1940s and the early 1990s, so there's a good chance his comment — if true — was uttered back in the days before even professional pilots believed in things like CRM. And on a purely technical basis, he's right in the sense that Walmart could exist without corporate pilots or aircraft. They could probably not exist without trucks and truck drivers. From his perspective, that probably made the truck drivers more valuable than the pilots. Obviously, you and I disagree with him on that one.

Regarding SMS and all that, I don't think it would have made any difference in this accident. We keep adding new certifications, systems, checks, procedures, and more in an attempt to prevent things like this from happening. The ones who really need them skate around every bit of it while still performing to spec when required. How do you combat something like that? At some point, the weight of all these safety systems starts to bog down the entire operation. You noted that the rogue has always been there, and it's true. So what of the pilots, contract and otherwise, who flew with these guys and never said a word? Clearly the community did not look upon them with the disdain you mentioned.

The idea of certificates and ratings for chief pilot, D.O, and such is an interesting one, but so many departments are small — like the one featured in my post. When you have only two pilots in your department, is "chief pilot" really a thing, or is it just a title someone gets to add to their resume?

One final thought: eventually, every exercise in safety reaches a point of diminishing returns. Aviation safety among 121 and 135 ops is pretty good. Since accidents are relatively rare, one could argue that what we're already doing is working. I wonder, then, how high will the pile of tests, certifications, managers, systems, checklists, and procedures will have to rise in order to nab that last 0.001%?

[Reply \(http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118032#respond\)](http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118032#respond)**Eric Jaderborg***December 21, 2015 at 1:53 pm*

Thanks, Ron. Not to belabor the point (but I will anyway, of course, as you knew I would!): I used the quote from Sam Walton to illustrate an attitude that is still too prevalent among corporate executives. In fact, I'm agreeing with a problem that YOU raised, not me (see your third bullet point under the causal factors for normalization of deviance). Whether or not Walton was technically correct about truck drivers is beside the point. Maybe he would value truck drivers over janitors, too, but without janitors the piled up filth in his stores would eventually begin to repel customers. And surely you don't intend to argue that aviation isn't an essential component of a huge, complex enterprise like Walmart. After all, it's your own type of job we're talking about here. The point is, as long as corporate CEOs take that sort of attitude toward flight operations, there will never be enough "buy-in" to create a meaningful safety culture. Many of them will have to be dragged to the table whether they like it or not.

I don't accept the premise of your second-paragraph comments. You can't say that an SMS wouldn't have made any difference in this one case with any more certainty than I can say that it would have. It's like arguing against climate change by trying to make your opponent prove that Global Warming caused this or that individual hurricane. You have to keep your eye on the trend, not the individual data point. And I wouldn't be so quick to dismiss the power of a safety culture to demand better behavior among participants. It does, and we both know this from personal experience. (And it's not about what a company's manual SAYS, but about how its culture backs it up.) There will always be outliers, but you don't stop working on the things you can fix or make better because there are outliers—any more than you would pull up all the stop signs, or refuse to install any more of them, because some people run stop signs. Sure, outliers run stop signs and cause accidents. But most people at least slow down to a "rolling stop" and look both ways, thereby preventing accidents, and they do it because there's a stop sign. This isn't about creating some new check or procedure to be skated around. This is about changing the culture of an organization, intentionally and by design. There's no hard evidence to determine how these pilots were viewed by the community at large, or at least none that was noted in the NTSB report, apart from one comment by one other pilot. It sounds more like they were operating in an insulated environment where there were few checks on their behavior, and that their deviance became self-reinforcing until it reached a tipping point. It's not clear that this was a classic case of "rogue behavior," and my use of that phrase was not in reference to this flight crew, but to non-compliant attitudes in general. This case reads more like gross negligence and, as you say, "normalized deviance." In most cases of accidents caused by rogue behavior there's plenty of warning. (Excellent book on the subject: "Darker Shades of Blue," by Tony Kern.)

Regarding certification of flight ops management: Argument by the

extreme is a logical fallacy. I'm not suggesting that every 2-pilot operation should require management certification. What I said was, "The public also has a right to demand that the managers of LARGE, COMPLEX FLIGHT OPERATIONS [emphasis added] also know what they are doing." Obviously, there would be a cut-off at some level, below which management certification becomes a burden without a benefit.

Finally, we're not talking about trying to squeeze out the last 0.001% in air carrier operations. This flight was conducted under Part 91, not 121 or 135. This is about trying to create an environment—an "ethos"—that decreases the likelihood that someone will do this sort of thing again. If that's NOT what we're talking about, then why even bother to bring it up? It's just becomes an exercise in righteous indignation and hand wringing. Furthermore, it's more than just the last 0.001%. The accident rate among Part 135 HEMES operators, for example, is shocking, even when you consider the high-risk environment they work in. Far too many are still doing dumb things like running out of gas, or driving helicopters into freezing rain. We still have a lot of work to do.

Thanks for the "challenge-response." It's stimulating.

ej

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118035#res>)



Ron Rapp (<http://www.rapp.org/>)

December 21, 2015 at 11:43 pm

"And it's not about what a company's manual SAYS, but about how its culture backs it up."

I couldn't agree more. What you'll sometimes see after an incident, however, is the addition of more systems rather than an analysis of whether the culture with that flight department backed up what they already had. It's like adding a law to prevent something that's already illegal from being perpetrated by those who would ignore that law anyway.

The Part 91 nature of the Bedford operator is an interesting point. 91 comes with additional freedoms since they are not transporting the general public for compensation. From a philosophical standpoint, I agree with that logic. The flight department in question had additional regulatory obligations just by nature of their operating a large turbine-powered aircraft, but that's arguing about the barn door after the horse has already escaped. Their failures were so basic in nature that they ignored things which apply to every pilot, even if they're flying a hang glider.

I don't know much about EMS helicopter operations beyond the fact that they're high risk by nature and have a checkered safety record. Is the risk analysis different when a life is on the line? Should it be? Beats me. But as you noted, an enjoyable and thought-provoking challenge/response. 😊

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=11804>)



Jay Barnes (https://www.facebook.com/app_scoped_user_id/10153149517836207/)

December 23, 2015 at 7:40 am

Wall o' text in 3...2...1...

Hi Ron, first off, great analysis. I entirely agree with your statement that it's the culture of the operation, more than any system, that determines the safety of the operation. However, I would argue this: not only would SMS have helped here, but SMS is even more effective in smaller operations in helping change the overall culture.

Out of coincidence, it happens that I have some relevant insights into this. I was the first Safety Manager for a flag carrier out of Bermuda, we were BDCA's "launch customer" for SMS, and I believe the first charter operator on this side of the Atlantic to have one. Secondly, I've flown both corporate and 121, and have seen the difference in attitudes towards safety and SOP between the two.

One of the reasons 121 operators are so successful with SOP adherence is due to the sheer size of the operation. First off, there are enough "good guys" to outnumber the "bad guys" that the culture is set that we're going to operate safely, period. Secondly, most 121 guys don't fly with the same guys every day – in the course of any given day, they're going to have some FO that's perfectly willing to haul them up in front of pro standards if they try to pull some cowboy bullsh*t. Given the self-policing nature of the operation, it really is just easier to operate by the SOPs. Much less drama for everyone. Do deviations happen? Sure. But the pressure to operate to standards is, quite simply, ever-present.

Obviously in smaller operations, you don't have that same critical mass, and the actions of one pilot (especially if he's senior in the operation) can set an overall culture tone that's difficult to break. This is where SMS comes into its own. So the SMS has three functions: to promulgate safety information to the staff, to determine whether repeated occurrences require a

change in SOP, and to act as a confidential liaison to flight crews concerning safety matters. The first and third functions are the most important to a smaller op. First off, by continuously communicating safety, flight crews are getting a consistent message that the company wants safety as a goal. This subconscious message is more powerful than you'd think – it consistently sets the tone that “this (safety) is how the company operates”. Subsequently, there's always that little voice in the back of flight crews' heads, pushing them back towards SOP.

The third function – that of a confidential liaison, is probably the most important. We've all seen that little blue CRM card at FlightSafety, “focus on what's right, not who's right”. By giving pilots a neutral moderator in terms of safety issues, it creates a twofold benefit – younger pilots feel more confident in addressing a sympathetic (and confidential) ear, and pilots who have strayed from SOP understand that it's not a personal attack, that their procedures really are making people uncomfortable. The biggest thing is that this is all being accomplished with the understanding that management won't hear a thing about it as long as a return to SOP is initiated. It doesn't even have to be a formal event, to date, every safety matter I've ever discussed with a pilot has been over a few beers (“few” being a somewhat flexible term) 90% of the time, the response I got was “yeah, I thought about that later, I really shouldn't have done that” with the other 10% being “wait, you mean that system doesn't work that way?” In all cases, drinking resumed unabated shortly thereafter, and all the feedback that I was given was that it was a positive experience. (I'll take a few slurred “I LURVE YOU MAN!!”s as positive feedback, anyway.)

So...do you have to have buy-in? Yes. Is it critically important to have the right guy as your Safety Manager? Yes. Does SMS work on the small scale? Absolutely.



John

December 21, 2015 at 12:57 pm

Very timely and right on point.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118033#respond>)

**AirFrank**

December 21, 2015 at 1:19 pm

Excellent article. I am a low time pilot (<350 hrs) but I can see bad behavior in what they did.

My private CFI was adamant that I call out what the RPM of our C172 was. Not just full power but announce how many RPMs the engine is putting out. After I earned my private I worked on earning my complex rating in an Arrow. Same instructor, same attitude, announce the RPMs! I didn't understand why reading the actual number mattered.

About a year later my kids wanted to fly and since I hadn't flown in the C172 in over a year I went up with my CFI. Apply full throttle, announce oil pressure in the green, and I pull the power. She's like why? I said we didn't have full power. The RPMs were only 2300 and full power is 2500. She's responds "2300 RPMs is full power in a C172, 2500 RPMs is for the Arrow. Excellent response by the way. Now lets taxi back and try this again."

As a newly minted CFI guess what I expect my students to do?

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118034#respond>)

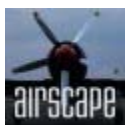
**Ron Rapp (<http://www.rapp.org/>)**

December 21, 2015 at 10:23 pm

Sounds like you had some very conscientious and detail-oriented instructors. Switching between models with fixed and constant speed props can require a bit of mental adjustment, but the fact that you were so well attuned to power output is a sign that you're paying proper attention to the correct things. Whether you're flying a recip, turboprop, or jet, one of the first steps in the takeoff process is confirm that you're getting proper power output from the engine.

I'm glad you're passing that on to your students! One day, it might save someone's life.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118040#respond>)

**airscapemag (<http://www.airscapemag.com>)**

December 21, 2015 at 1:57 pm

Bravo! Especially in driving right home to the systemic causes that lead to habitual deviance: That question was first in my mind as soon as I started reading. So many shortcuts and other deviance seems to be driven by 'productivity' (time,

profit, schedule pressures) rather than pilotage. Perhaps we need to be more overt about reminding the people who are paying that safety takes time.

Safety Management Systems are also an excellent systemic solution. They have been mandated in Australia for several years now, for all commercial operators. The system is scaled to the needs of small and large concerns and despite the setup costs, an SMS is now widely seen as delivering business benefits alongside improved safety – everything from an enhanced attractiveness to clients, to improved employee engagement.

It's interesting to note that business gains still seem more appealing than safety gains. Sigh! Anyway, I can highly recommend searching 'SMS' at <http://www.flightsafetyaustralia.com> (<http://www.flightsafetyaustralia.com>)

Finally, in my entirely amateur enthusiasm for airmanship, I've long said that the ability to follow rules precisely is as good a way of showing your skills as precise flying. Perhaps we could promote that attitude too? I've heard all kinds of things about regulations, safety and even employers, but I've never met a pilot who didn't want to demonstrate their skill level.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118036#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 21, 2015 at 11:10 pm

Excellent points, all.

I think business gains are more appealing than safety gains because they're more tangible. Most flight operations have a clean accident record prior to, say, instituting a safety management system, so maintaining the same zero accident rate doesn't look like much of a "gain" to the bean counters. In other words, you can't prove a negative.

An increase in corporate earnings is far more concrete. And since making money is the central purpose of any business enterprise, it gets more natural focus from the corporate structure, which is fully designed and oriented toward that end.

Your points about following procedure precisely and reminding the higher-ups that safety takes time are spot on. And they remind me of a guy who flies for my company who was a NASA test pilot. I learned a lot from watching him fly. He's precise and methodical... but just as important is what he's *not*: fast. He has flown the G-IV for a long time. He knows it well, and could be zipping through checks and flows as quickly as anyone. But he doesn't, and I think there's a good reason for that. He's not just going through the motions, he's really paying attention to what's happening every time a control is moved or a button is pressed. He sees things other people miss. It's a great example, and in the end I'd bet it doesn't take much additional time.

I've noticed that about the best pilots: they never rush. In fact, the more hectic things become, the slower they get.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118041#respon>)



DRG

December 21, 2015 at 6:20 pm

As someone whose studies the Normalization of Deviance and is a professional pilot. I am both shocked and concerned at the comments i get from FOs that tell me "you're the only one that follows the SOPs " on certain actions. As an industry we dont seem to be getting it. We review these accidents in annual CRM classes and we say to ourselves " not me " yet they still happen.

There is an easy solution to tragedies like this FOLLOW YOUR SOPs ..They will close the holes in the swiss cheese model and protect you ... Every time

Good Flying

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118037#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 21, 2015 at 11:15 pm

I'm pretty sure you're not the only one getting comments like that. I've heard it from people with whom I fly as well. We owe it to those FOs to operate as we were trained, and to set a good example for them. And most of all, to create an environment when they can point out things that we are doing differently without fear of being put down or reprimanded for it. I know I haven't always been perfect with my execution of the SOPs.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118042#respon>)



Joe Miller

December 21, 2015 at 8:33 pm

Ron, nice job. During my 46 years flying jets for Kimberly Clark, Tenneco, the Galvin Family (Motorola) no aircraft moved without all controls checked per the checklist. One thing we always reminded the new young pilots-IN THIS GAME THERE IS NO RESET-DEAD IS DEAD.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118039#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 21, 2015 at 11:19 pm

Thanks Joe. That's a reminder every pilot could stand to hear from time to time — myself included! Perhaps that's why we examine accidents like this so closely: we just can't afford to screw up, and it's worth remembering that if we're not careful things can go south in the blink of an eye.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118043#respond>)



Thomas Frymark

December 22, 2015 at 1:09 pm

Excellent advice for daily life. Acceptance of interstate highway speeds come to mind, and lack of polite social behavior as well.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118045#respond>)



Dan Carlson

December 24, 2015 at 6:09 pm

You do realize that travelling the speed limit in the left lane is more dangerous than driving the speed of traffic, don't you?

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118085#respond>)



Bob Kuykendall (<http://gravatar.com/hpaircraft>)

December 22, 2015 at 2:31 pm

Just curious, what does it take to disengage the gust lock on that aircraft type?

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118046#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 22, 2015 at 2:38 pm

The tab at the top of the gust lock is hinged. Pulling the bottom of the tab aft will release the lock. Spring pressure then tries to pull it into the retracted position. The pilot lowers the handle gently into the pedestal and voila! You're done.

Of course, this assumes the engines are not running. If they are, then the engine-driven hydraulic system will be putting 3000 psi of force on the controls while they are locked. That's why you cannot release the gust lock while the engines are running.

If the engines are inadvertently started with the gust lock engaged, the proper procedure is to shut down, allow the hydraulic pressure to bleed off, THEN release the gust lock.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118047#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 22, 2015 at 2:40 pm

I should add that you can see a better photo of the gust lock handle here:

http://www.ainonline.com/sites/default/files/uploads/gulfstream_082114.jpg (http://www.ainonline.com/sites/default/files/uploads/gulfstream_082114.jpg)

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118048#respond>)



Serge (<http://mt7.ca>)

December 22, 2015 at 5:57 pm

To me, this is the kind of mistake or serial mistakes that should be taken care of by better safety systems in aircrafts. If the aircraft could itself do checklists, it would be very efficient and the pilots could not possibly skip them. I.e. make deviance unadvantageous from any point of view (efficiency). In the present case, the gust lock did not stop throttling up. If a voiced warning had said "gust lock engaged, reduce power" or something of the sort, the most deviant pilot could not have ignored it.

[Reply \(http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118049#respond\)](http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118049#respond)



Ron Rapp (<http://www.rapp.org/>)

December 22, 2015 at 6:07 pm

The G-IV was certificated in the mid-1980s, but it does have a version of the safety system you're thinking of: it's called a configuration alarm. If the flaps, cowl anti-ice, or other items are not properly set, it will warn you with a red "ACFT CONFIG" CAS alert and an aural triple chime when the power levers are advanced for takeoff.

Unfortunately, the gust lock is not part of that system on the G-IV. It might be on newer aircraft. I would imagine we will see more of that as advanced flight decks become the norm. It's tempting to say that a good takeoff configuration alarm would prevent these kinds of accidents... but humans have proven to be quite innovative in coming up with ways to bypass these safety components — sometimes inadvertently, and sometimes on purpose.

[Reply \(http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118050#respond\)](http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118050#respond)



David (<http://www.aviationguy.com>)

December 23, 2015 at 6:11 am

It is amazing how often aviators knowingly bypass warnings because they think they know better. Sometimes the system is being stupid and it is annoying to shut down or taxi back when you know full well what the issue is and that it will not prevent a safe flight. The problem is that the vast majority of these systems have been developed exactly because someone thought they knew better than the engineers, or the checklist, or even a warning system.

When I read about accidents like this it just makes me sick because it was 100% preventable. There is no amount of prevention that would have kept these two from doing what they did. Whether it was this accident or one in the future, their behavior would have caught up to them. Aviation is such a dynamic endeavor that we must rely on checklists and warnings to help keep us in line. Utilizing those tools that can help normalize every situation keep us safe and ignoring them will ultimately lead to disaster.

I love how you mentioned that some of the best pilots you know actually slow down when the stress is the highest because I have seen that myself. We see complete chaos in movies when there is an issue in flight, but from my experience it is some of the most calm flying I have seen or

heard about because we are so focused on utilizing the checklists and finding a solid solution.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118054#res>)



Ron Rapp (<http://www.rapp.org/>)

December 23, 2015 at 10:54 am

It's counterintuitive, isn't it, all that calm and slowness? And you're right, it's the exact opposite of what you see in film and television. They need to pack in maximum drama, build tension, and loud frenetic activity does that. In the real world, that sort of thing leads to lesser quality performance by humans under stress.

I got a good look at the slow-down-and-focus thing when I was in G-IV initial (read that post here (<http://www.rapp.org/archives/2011/06/g-iv-type-rating-day-16-17/>)). My sim partner was an excellent example. As I wrote at the time, "When the fire bell is ringing and the Crew Alert System is filling the screen in front of you with blinking red messages, the natural tendency is to do something now. And he did. But slowly, at a smooth, steady pace with the wheels in his head clearly turning before any buttons were pushed, any commands given, any responses to checklists provided. As a result, he made no mistakes."

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118054#res>)



Pet Hoffman

December 22, 2015 at 7:29 pm

A fascination discussion. I'm a long-retired Coast Guard HH-3F helicopter pilot. In reading your comments, I began to wonder what would happen if pilots were required to spend a week annually in a simulator, polishing their IFR skills AND experiencing all sorts of difficulties that can not safely be simulated in flight with strong emphasis on standardization — following flight and emergency procedures to the letter whenever possible.. I did that every year was a much more consistent and prepared pilot because of it. So was the rest of my flight crew. Seems to me that might help change some of the environment you've described so clearly.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118051#respond>)

**Ron Rapp** (<http://www.rapp.org/>)*December 23, 2015 at 11:02 am*

In theory we already do that with annual recurrent sim training, although there are probably myriad ways our time in “the box” could be improved upon.

One of the most vexing things about the Bedford crash is that the pilots of that airplane went annually to recurrent training and **must** have used SOPs, CRM, and performed to spec, because they passed their tests every time. So while they were *perfectly capable* of following checklists and using proper procedures, they apparently only did so when they were in a cockpit that didn’t fly and put them at no physical peril.

It’s almost as if they were more afraid of failing a checkride than dying in a crash... although of course we know that’s not true. The sad truth is that they simply never thought it would happen to them.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118060#respon>)

**Dave** (<http://www.aviationguy.com>)*December 23, 2015 at 4:16 pm*

You say that they were obviously not more afraid of failing a checkride than they were of dying but that was exactly the problem. Obviously no one would RATHER die than fail a checkride but these guys clearly never thought they would be in a crash.

They had forgotten that every flight every day has the potential to kill you. Not that we should live in fear of flying but we must respect the immense risk that we are taking simply by nature of the fact that we are in a metal box full of gas traveling at high speeds and high altitudes. To quote Nicholas Cage, ‘The moment you don’t respect that, it kills you.’

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118068#res>)

**Jim McMahon** (https://www.facebook.com/app_scoped_user_id/10206781275982825/)*December 22, 2015 at 7:41 pm*

Excellent analysis. A Master Chief Aviation Machinist’s mate named Dave Benefiel told me about the crash of a DC3 on the California coast in the late sixties or early seventies caused by an overlooked gust-lock early in my Coast Guard career. He was crewing the HH52 that initially responded to the crash, which sadly had no

survivors. Oddly enough, we were watching coverage of the Air Florida flight 90 crash. This concept (never heard it called Normalization of Deviance, but that works...) is not exactly new. There is a political concept known as the "Overton Window" which describes similar reactions and behaviors.

https://en.wikipedia.org/wiki/Overton_window (https://en.wikipedia.org/wiki/Overton_window) . It describes how actions like skipping a checklist can be seen as acceptable.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118052#respond>)



Robert Meder

December 23, 2015 at 3:40 am

Ron – excellent piece. I'd like your permission to forward it to our editor for NAFI's "eMentor" electronic newsletter. In my introduction, I want to pass it on to our members, either as a link or reprint, and stress the importance of:

- 1) Making sure SOP is ingrained in new pilots from the start as well as reinforced in proficiency/upgrade training;
- 2) Ensuring that we look at our own habits with an objective eye and improve the good and excise the bad. As Herbert Tarr once wrote in a book called "The Conversion of Chaplain Cohen" – "If I compromise my ideals now, what will I do when I'm forty?"

Bob Meder – Chair, National Association of Flight Instructors

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118053#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 23, 2015 at 6:33 am

Thanks, Bob. I'm honored that you feel the piece is worthy of NAFI's newsletter. You're more than welcome to link and/or reprint it in eMentor as you see fit. Tarr's question is one we should each consider from time to time. The slope is slippery, and aviation is quite unforgiving when we fall.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118056#respond>)



Frank Fournier

December 23, 2015 at 6:29 am

Not much said about the delayed abort...

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118055#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 23, 2015 at 10:56 am

I touched on it a bit in a July post entitled “We Don’t Train for That” (<http://www.rapp.org/archives/2014/07/we-dont-train-for-that/>), which ironically was also prompted by the Bedford crash.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118059#respond>)



Mike Dewey (<http://cspflyingclub.org>)

December 23, 2015 at 11:16 am

Ron, very nice. Even though we fly a much small and less complex plane, I referenced the article up on our club’s Facebook site. The comments on the article are high-quality too. Thanks for your insights!

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118061#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 23, 2015 at 11:26 am

Thanks Mike! I’m glad you enjoyed the post. The lessons of the Bedford crash are equally applicable to small airplanes as they are to large ones — perhaps moreso since small airplanes are typically crewed by a single pilot and there’s nobody watching your back.

The comments section on my site is one of the things I’m most proud of. Instead of the spam, name calling, and incivility you’ll find on most sites, the readers here are respectful and always seem to bring fascinating insights and experiences to the conversation. They enhance the posts almost more than the original content itself.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118062#respond>)



Clint Hanrahan (https://www.facebook.com/app_scoped_user_id/470879819765927/)

December 23, 2015 at 12:33 pm

As much as many in the business may not like it, the time has come for digital video recordings to be used as a safety tool. Deviance is human nature, when public safety is involved, every single tool available should be used to its fullest extent to put a stop to it. I've seen firsthand the safety lapses that can occur when someone thinks they're too experienced, too rushed, too busy or just too cool to follow the proper safety protocol. Video recording with random audits and compliance checks both within an organization and by external entities, followed by enforcement actions, would go a long way towards eliminating deviance. This culture change is coming whether we like it or not, the only question that remains is, how many more preventable deaths will it take to get it done? For once, the FAA should take a proactive approach, rather than the tombstone approach to a safety issue.

Unfortunately, the FAA's incompetence, lack of leadership and politics will keep the FAA in the "leading from behind" mode until major culture changes are made.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118063#respond>)



Eric Jaderborg

December 23, 2015 at 12:51 pm

Hey, that's great! Take another gratuitous swing at the FAA: everybody's favorite punching bag. And just as soon as the FAA tries to get "proactive" about an issue the very next sound we hear will be the howls of protest because the FAA is "knee-jerking" or taking action that isn't warranted by the facts or the accident history or whatever, or trying to get into everyone's knickers...or on and on. Hey, FAA...do something! Hey FAA, get off our backs! What is it, exactly, you want the FAA to do, Mr. Hanrahan? Until you've worked there, you have absolutely no idea what you're talking about.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118064#respond>)



Clint Hanrahan (https://www.facebook.com/app_scoped_user_id/470879819765927/)

December 23, 2015 at 3:07 pm

OK, I'll make it more clear. I want the FAA to put cameras on commercial pilots, air traffic controllers and anyone else involved in aviation safety. They need proof positive of compliance with cockpit and control room procedures. The videos need to be audited for compliance and the offenders need to be dealt with. They won't do this because they bow to union and political pressure, and because FAA management is too incompetent to get it done. The NTSB has recommended it, what is the delay? When the death count rises, it'll happen, but they shouldn't wait.

"Until you've worked there, you have absolutely no idea what you're

talking about.”

Does my 30 years count?

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118067#res>)



Jon Lee

December 23, 2015 at 1:57 pm

A few quick thoughts:

Favorite quote: “You can’t fundamentally change the human condition but you can change the conditions in which humans work” – James Reason.

You can have the best SMS system (procedures, documents, etc) but unless you have the company culture to back it up it is useless. Having observed the implementation of SMS in airline operations in Canada over the past 10 years, this sentiment rings very true.

All the superb comments above have in one way or another identified the issue of organizational factors as being a critical component in understanding why the flight crew ended up where they did. It is too bad the NTSB report is fairly silent on those issues.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118065#respond>)



Mike

December 23, 2015 at 2:18 pm

PROLOGUE

We should all bear one thing in mind when we talk about a troop that rode one in. He called upon the sum of all his knowledge and made a judgment. He believed in it so strongly that he knowingly bet his life on it. The fact he was mistaken in his judgment is a tragedy, not stupidity. Every supervisor and contemporary who ever spoke to him had an opportunity to influence his judgment. So a little bit of all of us goes in with every troop we lose.

Anonymous

ATCH 11-1

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118066#respond>)



Monty

December 23, 2015 at 4:25 pm

The last thing I desire to do is try to add to the obvious, a well detailed and written compendium of negligence and deviation from the established norms.

What I will add is JOB WELL DONE FOR THIS AUTHOR.

Aviation needs more of this type of documented thinking which digs at the root of a serious, sensitive, and I assume frequently occurring syndrome among pilots. Especially those with vast experience and great safety records suddenly finding themselves faced with the check box vs safety aspects of flight. These check list are standards, rules, must be routine and because of those elements some may seem near non since when faced with time constraints, approaching weather hazards, personal goals and other time sensitive situations. A condition that may begin to affect any one of us especially when we foremost fail to recognize FLIGHT SAFETY IS ALWAYS FIRST. First over contracted promises and commitments of any type, including personal, to get airborne or reach a destination within a specified allotment of time.

All of this leads to a question. What automated system could help prevent not observing check list requirements and promote check list efficiency for pilots? Potentially a system that automated each check list along with a item by item manual response time allocation. A system that will re-start or minimally require re-doing a list item when too little time is taken between inputs to have completed it accurately. The thinking is if a pilot has to consume the same amount of time to circumvent a check list as to properly complete the list it would not only be a reminder to complete all check list accurately but also afford check list reporting statistics to aircraft owners for compliance.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118069#respond>)



Monty

December 23, 2015 at 6:47 pm

A reply to myself... You failed to mention air plane manufacturers placing detection devices that audio alert pilots to do things before another action like advancing the throttle and releasing parking brakes or shutting down the engines.

DISENGAGE GUST CONTROL – ENGAGE GUST CONTROL

A simple announcement along with prevention of taxi capability may have saved the lives lost.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytoocom=118071#respond>)



Dave (<http://www.aviationguy.com>)

December 23, 2015 at 10:42 pm

It might have but there are many accidents where aural warnings were

not heard or simply ignored. In this case they even acknowledged the issue, but refused to admit their mistake and tried to fix it on the fly. No matter how many programs or warnings they create there will always be people that try to find a way around them.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118073#res>)



Randi R

December 23, 2015 at 6:01 pm

I started my flying career in the general aviation world over 30 years ago, transitioned to the USAF where I flew heavy crew based aircraft (C-9 and C-5) and having spend several years in the commercial industry (mostly B737) and finally the last several years in University based aviation training as a professor, I find that civilian training ranges widely in the quality and the level of discipline taught and required. Large 141 programs with people running them who have 121 and military experience seem to have well structured and disciplined programs that model excellent practice. That cannot be said of many of the smaller programs and part 61 operation. I am not saying all small programs don't have great structure and discipline, but if you have never been trained in a SOP process and if you have never operated in one, it is very hard to appreciate what it does for you.

The concept of primacy of learning is powerful and if your early experience allows, permits or even encourages lax behavior, it will likely become the ethos by which you operate. This is more common in general aviation training than many want to acknowledge.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118070#respond>)



RBR

December 23, 2015 at 10:30 pm

The odds are that the pilot in command was very autocratic...his idea of crew coordination was probably "shut up!" If I want anything I'll tell you. There were mishaps in the majors attributed to this. There were event classes.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118072#respond>)



Saabjock (<https://plus.google.com/114938514712545729995>)

December 24, 2015 at 1:51 am

After reading this report, I'm at a total loss as to why they continued down the

runway..knowing fully well the gust-lock was engaged.

Obviously, it was one bad decision driving another?

Did they continue... thinking it would be difficult explaining to the boss why they had to do a rejected take-off?

It's difficult to determine what drove the decision.

What is known, is that this tragedy could have been averted.

Though it's difficult to miss, with it's almost 2" x 1/2" red rectangular shape and with a white gust-lock legend, it would have been caught with the normal control free check done during taxi to the runway.

It's so very difficult to believe that seven people are now deceased over it.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118074#respond>)



Erik White

December 24, 2015 at 6:12 am

It sounds like this accident happened 20 or 30 years ago. It's hard to imagine today's Gulfstream jet crew screwing up this badly. Not just screwing up, but having a habit of operating an aircraft in a careless and reckless manner like this.

And I respectfully disagree, this could not happen to most of us. Most pilots are not like what was described above. It's like suggesting that anyone of us could someday be operating an aircraft drunk. Simply not true. Most pilots take far more pride in their work, and in getting passengers to their destination safely.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118075#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 24, 2015 at 10:07 am

I agree with you: most pilots are not like this. That's part of the reason that accidents of this nature are uncommon.

As far as "it could never happen to me", I find it interesting that post-accident interviews indicate that these pilots were considered to be skilled professionals, well-regarded in the business, even by those who flew with them. Their operating procedures were acceptable enough that nobody ever stood up and said "hey, this is wrong". That implicates more than just the two who were on the flight deck that day.

I understand where you're coming from, but thinking it could never happen to us is a mistake IMO because these pilots thought the very same thing, I'm sure, right up to the moment that it did.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118080#respond>)



Francis Paul John McAnarney Jr. (https://www.facebook.com/app_scoped_user_id/1205996635/)

December 24, 2015 at 9:45 am

checklists were created for a very specific and intelligent reason.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118077#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 24, 2015 at 9:50 am

And yet many — not just pilots — fight against their usage. Doctors are just one such example. Checklists are starting to make their way into the medical profession, but they lagged behind the aviation industry by many, many years.

I think that's why this post has generated such response. It's not a pilot-specific, it's a human nature thing.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118078#respond>)



bob thomason

December 24, 2015 at 10:16 am

Keep those big planes out of Hanscom / Bedford. They belong at Logan.

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118081#respond>)



Ron Rapp (<http://www.rapp.org/>)

December 24, 2015 at 10:19 am

Why is that, Bob?

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118082#respond>)



Robert (Bob) McGregor

December 24, 2015 at 11:07 am

Good article and analysis, Ron.

One thing I picked up on is the statement you made that recurrent training very often is considered a necessary evil to check off a box (not your exact words, but paraphrased). I couldn't agree with that more. In my years of corporate flying I really believe most pilots attended recurrent training because they had no choice – not because they wanted to be there. And as we all know the insurance companies have more to say about recurrent training than the FAA.

I always looked forward to recurrent training and can honestly say I can remember only one time I felt I didn't learn anything or take away something new and/or invaluable. That particular time I felt the instructor was not sufficiently trained on the subject aircraft and I let the training company know that. I later received a letter from the company thanking me for my input and I never experienced that feeling with that company again.

Recurrent training must be taken seriously and dialogue between instructors and other trainees can be invaluable. In fact a lot can be gained from just conversing with other pilots. I think you made mention of this in your article. I have often thought every recurrent session should end with the equivalent of a Part 135 check ride (or type ride) with a pass or fail result (yes, I have taken quite a few of those). If recurrency is required semi-annually, an annual check ride would suffice. This would force pilots to take training a little more seriously. Certainly the cost of training would increase. Failing a check ride makes one realize they are not always at their best and are not immune to mistakes – some which could be lethal. It is devastating momentarily to fail a check ride, but, believe me, experiencing a failure results in a better and more attentive pilot.

We are all human and as you pointed out are all capable of making mistakes – some with dire consequences. The key is recognition and immediate action, neither which appeared prevalent in the G-IV accident. I can't imagine continuing a take-off roll when you know you have a problem. Now that I am retired I can honestly say that will never happen to me. Oh, but I'm still driving!

Bob McGregor
Retired Corporate Pilot

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replyto=118084#respond>)



cap11ahcou8

December 24, 2015 at 8:18 pm

Ron et al,
Excellent article, and excellent discussion!

I'd have to add that, even in the airline culture, the "normalization of deviance" can occur, from cockpit to cockpit, from captain to captain. SOP's are drilled into us, but it's the CAPTAIN who sets the pace and style of the cockpit for the next 4 days. An assertive FO may speak up to deviations from SOP's...or may not.

When I interviewed Qantas A380 Captain Richard De Crespigny (author, QF32), whose #2 engine exploded inflight, damaging all but one system, I asked him specifically what part of his culture, corporate and national, helped to bring about a safe outcome. He said, without a doubt, the attitude of Australians to always skeptically question authority helped. That is, a leader—in this case the Captain—MUST lead, and properly, or the others will refuse to follow. This leading by example would certainly aid in FO's speaking up to deviations from SOP's.

Studies have showed deviation from SOP's lead to doubling of mistakes.

Great read, Ron!

Eric "Cap'n Aux" Auxier
capnaux.com

Reply (<http://www.rapp.org/archives/2015/12/normalization-of-deviance/?replytocom=118086#respond>)

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About the Author



Ron Rapp (<http://www.rapp.org/about>) is a professional charter pilot, instructor, and aviation writer specializing in tailwheel, aerobatic, experimental, formation, and glass-panel flying. He's also an aircraft owner, aerobatic competitor, and a National-level judge. He and his wife live in beautiful Orange County, California with their son and two evil -- yet diabolically brilliant -- Siamese cats. (read more (<http://www.rapp.org/about>))

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