Aviation Human Factors Industry News

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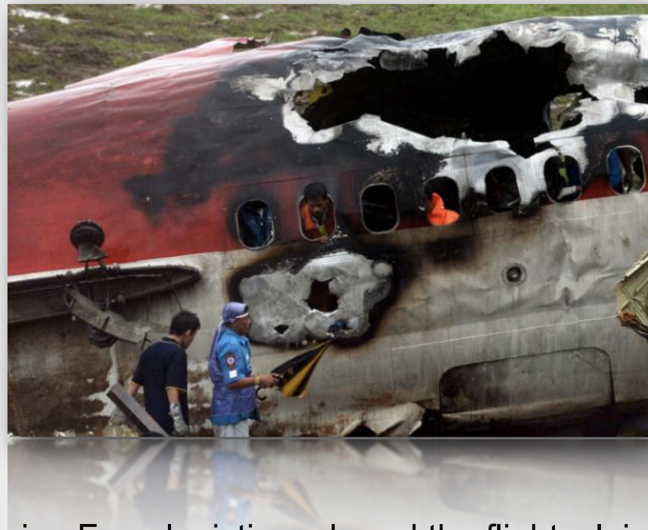
Paris court hands ex-Thai airline CEO 4-year term over 2007 crash



A jet operated by Thai budget airline One-Two-Go crashed while trying to land on the resort island of Phuket in September 2007, killing 90 people.

A French court on Tuesday sentenced the former head of a Thai budget airline to four years in jail over a 2007 crash that killed 90 people, nearly two-thirds of them foreigners.
The suit, filed by the families of the nine French victims aboard the flight, claimed the crash landing on the resort island of Phuket was "an accident waiting to happen".

The Paris court found Udom Tantiprasongchai, the former head of the airline One-Two-Go, guilty of voluntary manslaughter and also set a fine of 75,000 euros ($82,300).

But despite an international warrant for his arrest, Tantiprasongchai has never been detained and did not respond to the French judicial summons, and was tried in absentia.

The crash occurred on September 16, 2007, when the Boeing passenger jet carrying 123 passengers and seven crew skidded off the runway and burst into flames while trying to land in driving rain and heavy winds.

The victims' families accused the airline of trying to cover up a series of failings which led to the crash, including overworked pilots and falsified flight logs.

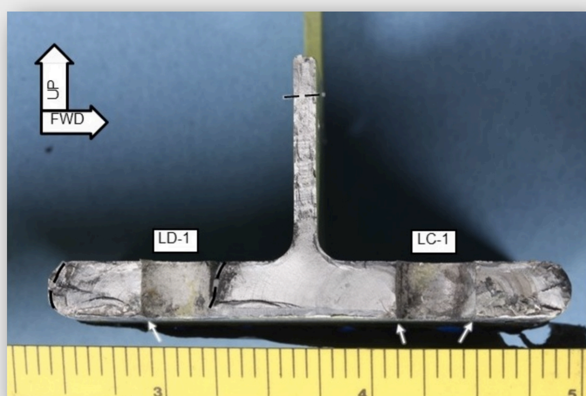
In its ruling, the court found evidence of "mistakes" by the pilots but also faulted the airline, saying the crew "did not have the capacity to react correctly... because of their fatigue and stress."
Among the dead were 33 Thai nationals and 57 foreigners, mainly tourists from Britain, Israel and France.

One of the plaintiffs, Gerard Bembaron, who lost a brother in the crash, hailed a ruling that "sends a serious warning to airlines with dubious practices, even if they don't fly in France."

French courts are allowed to hear cases involving accidents or attacks anywhere in the world if French citizens are victims.

One-Two-GO and its parent company Orient Thai have both ceased to operate since the crash.

NTSB Cites Fatigue Cracking In Fatal ERAU Crash



The NTSB found that the crash of an Embry-Riddle Aeronautical University Piper PA-28R-201 that killed two people in April 2018 was caused by extensive fatigue cracking in the left-wing main spar, according to the final report (PDF) issued by the board on Tuesday. As previously reported by *AVweb*, the left wing separated from the aircraft shortly after a touch-and-go at Florida's Daytona Beach International Airport (DAB). A second ERAU Piper was found to have a similar fatigue crack in its left-wing main spar when the school's fleet was examined after the accident. The board noted that no anomalies in materials or construction of the wing spars were found on either aircraft.

“The NTSB concludes that, due to flight training maneuvers, significant operation at low altitudes, and frequent landing cycles, the accident airplane (and its sister airplane in the operator’s fleet) likely experienced landing, gust,

and maneuver loads that were more severe than expected for training aircraft,” the NTSB said in its summary (PDF) of the report. “Therefore, the low-altitude flight training and frequent landing environment likely resulted in the accident airplane accumulating damaging stress cycles at a faster rate than a personal use airplane.”

The NTSB reported that the accident aircraft had accumulated 7,690.6 hours and 33,276 landing cycles prior to the crash, averaging 4.33 landings per hour of flight time. The board also found reports of reported flap extension overspeed, gear extension overspeed and hard landing events in the aircraft’s logs, but noted that airframe inspections had been performed after each event with no defects noted.

The NTSB further established that, due to its location, the fatigue cracking would not have been visible from either the interior or exterior of the airplane. In response to the potential for such cracking to go unnoticed, the FAA issued a notice of proposed rulemaking (NPRM) eight months after the accident which suggested required wing spar inspections for nearly 20,000 Piper PA-28 series aircraft. The NTSB said it had “expressed … support of the proposed AD’s inspection requirements but urged the FAA to reexamine the proposed AD’s applicability to certain airplanes based on airplane usage.” Comments closed on the NPRM in February 2019, but an AD has not yet been issued.

https://app.ntsb.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20180404X13226&AKey=1&RType=Final&IType=FA

https://www.federalregister.gov/documents/2018/12/21/2018-27577/airworthiness-directives-piper-aircraft-inc-airplanes

The Case for Voluntary SMS for Small Operators

by John Goglia

The safety benefits of maintaining a safety management system (SMS) in aviation should be well known at this point. An effective SMS provides an organization with a systematic approach to managing safety risks and making sound safety decisions. A functioning SMS begins with a commitment from the top of the corporation but engages workers at all levels of the company in identifying safety hazards so that their risks can be assessed, analyzed, and eliminated or mitigated. It will also ensure that risks are properly assessed over time and changing circumstances. Of course, the point of SMS is to reduce the potential for accidents or incidents but, in my experience consulting with airlines of all sizes, it also provides economic benefits unrelated to safety, such as improving efficiencies and promoting cost-savings.But since the FAA doesn't require SMS for corporate or Part 135 operators, I'm asked on a regular basis by these operators whether I think their company should voluntarily adopt an SMS program, whether the time and cost of adopting a program is worth the effort. Some have read something about SMS and are curious if they will soon be required by the FAA to have it.

Based on the lengthy rulemaking process and the fact that there's no rulemaking proposal out there, it's pretty doubtful that any new SMS requirements would come out for operators in the next 5 or even 10 years. But some operators just want to know whether—and how—it could benefit them. A few Part 135 operators may have read the NTSB's 2019-2020 Most Wanted List of Transportation Safety Improvements, which includes adopting SMS to improve the safety of Part 135 aircraft operations.

The NTSB's recommendation pertains to Part 135 air medical service, air-taxi, charter, and on-demand flights and recommends that Part 135 operators be mandated to "implement safety management systems that include a flight data monitoring program, and they should mandate controlled-flight-into-terrain-avoidance training that addresses current terrain-avoidance warning system technologies." Clearly, the NTSB is strongly advocating for the expansion of SMS requirements to Part 135 operators. But the NTSB can only issue recommendations. It takes the FAA—or congress—to make them mandatory.

Most of the companies asking me about SMS these days are the smaller business flight departments and charter operators. The larger ones (those that provide non-medical transportation) have—to my knowledge—all adopted SMSs either because they are flying customers to countries abroad that require them to have an SMS or because they need an SMS to get a high rating from a charter rating service, or both. For example, if a Part 135 or business aircraft operator wants to fly to a European Union country, the charter company must have an approved SMS program that meets the requirements of ICAO (the International Civil Aviation Organization).

In addition, to get a platinum rating from Argus, one of the major charter rating services, or qualify for IS-BAO(International Standard for Business Aircraft Operators) registration, an operator must have a functioning safety management system. Many charter customers—especially the major corporations—require a charter company to hold a platinum rating to contract for the air transportation of company employees. So, in terms of business competitiveness, a functioning SMS is highly desirable for many operators, and they have chosen to voluntarily adopt an SMS program.

At this time, the FAA's SMS rule—14 CFR Part 5—applies only to Part 121 operators. So technically speaking, the Federal Aviation Regulations don't require any company other than an air carrier flying under Part 121 to have an SMS. But the FAA has been encouraging Part 135 and other operators for some time to adopt voluntary SMS programs in advance of any rulemaking. Although voluntary, the FAA has an approval process, which lays out that a Part 135 operator satisfy the requirements for operating in EU countries.

The FAA's voluntary program tracks the Part 5 requirements for Part 121 operators so it's likely that if Part 5 is ever expanded to include Part 135 operators, those with an approved voluntary program will be ahead of the game when it comes to compliance.

I have been a big proponent of SMSs for years, decades really. Having been involved in aircraft accident investigations for virtually my entire working life, I have been to the scenes of far too many accidents that subsequent investigations have determined were caused by lax organizational processes and poor safety cultures. I have spoken to far too many victims' families distraught to learn not just that their loved ones had died, but that the accident might well have been preventable.

A functioning SMS can create a safety culture that encourages employees to identify and report hazards that executives in their offices would never be aware of. SMSs provide a structured approach to safety risk management that can be a significant benefit to companies of all sizes, even mom-and-pop operators. Of course, a good SMS program is not a one-size-fits-all solution. Clearly, smaller, less complex operations can do with a properly scaled program that's easy for a small operator to manage and yet provides safety benefits.

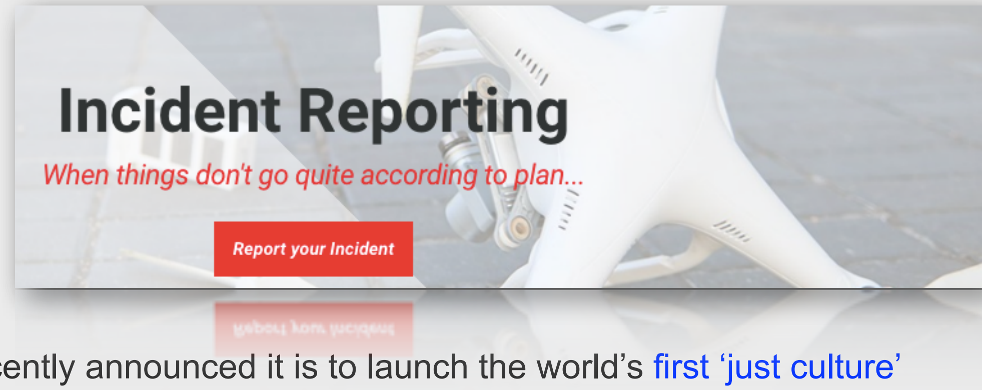
So, even if the FAA has not seen fit to mandate that Part 135 or business operators implement an SMS program, I would strongly urge operators—especially air ambulance providers who have had a challenging accident record—to voluntarily adopt one that meets the requirements of Federal Aviation Regulation Part 5.

Since SMS implementation for operators other than Part 121 air carriers is voluntary, companies have a great deal of flexibility in how they adopt a program. There are many resources for help getting started, including talking to professional associations your company may belong to. The FAA's website is a good place to start to get some background on the SMS program.

https://www.faa.gov/about/initiatives/sms/specifics_by_aviation_industry_type/air_operators/

https://www.faa.gov/about/initiatives/sms/explained/

Altitude Angel Launches Drone Industry's First 'Just Culture' Reporting System



London, UK; Altitude Angel, the world's foremost UTM (unmanned traffic management) provider, has recently announced it is to launch the world's first 'just culture' reporting system for drone pilots and operators.

Emulating the approach already successfully established in manned aviation, where Mandatory Occurrence Report (MOR) and Voluntary Occurrence Reports (VOR) are submitted following an incident, Altitude Angel is to establish a similar reporting system for drone pilots and operators to report an event.

At present, there is no industry-wide function for drone pilots and operators to report or register any unplanned event they or their drone are involved in. The result of this could mean similar instances being repeated again and again, which could be easily prevented if learnings are made at an early stage and widely shared.

Philip Binks, Altitude Angel, Head of Air Traffic Management, said:

"THE WIDER DRONE INDUSTRY IS BEHIND MANNED AVIATION WHEN IT COMES TO REPORTING UNPLANNED EVENTS AND UNUSUAL EPISODES, BUT IT DOESN'T HAVE TO BE SO. SAFETY WILL BE KEY TO ENSURING THE INDUSTRY'S EXPANSION, SO WE SHOULD TAKE THE LESSONS >

LEARNED IN MANNED AVIATION AND ADOPT 'JUST CULTURE' REPORTING ACROSS UTM."

At present, drone operators are directed towards the CAA's system for reporting occurrences, the same system and set of questions which manned aircraft pilots use to report incidents.

"THE CAA'S REPORTING SYSTEM HAS BEEN DESIGNED FOR OCCURRENCES INVOLVING MANNED AIRCRAFT, WHICH CAN REQUIRE A GREAT DEAL OF TECHNICAL AND OPERATIONAL DATA, TO BE COMPLETED BY EXPERIENCED AVIATORS." SAID BINKS. "WHEN COMPARED TO TWO PASSENGER AIRCRAFT NEARLY COLLIDING, A DRONE OPERATOR MAY FEEL THEIR 'LITTLE' INCIDENT, ACCIDENT OR EPISODE IS NOT WORTH REPORTING IN THE SAME WAY, SO THEY SIMPLY DON'T BOTHER. BUT THERE ARE LESSONS TO BE LEARNED IN EVERY INSTANCE WHICH IS WHY OUR SYSTEM HAS DRONE USERS AT ITS HEART."

The Altitude Angel reporting system will be an anonymous web portal where drone operators will be asked to fill in a small number of questions if they experience something unexpected. Altitude Angel will collate the findings before making it available to the wider industry in order for each business segment to apply the appropriate learnings and improve safety.

Should the episode be serious enough to warrant a VOR submission, the drone pilot or operator will be redirected to the CAA website where it states 'the purpose of occurrence reporting is to improve aviation safety by ensuring relevant safety information relating to civil aviation is reported, collected, stored, protected, exchanged, disseminated and analyzed. It is not to attribute blame or liability.'

Binks, who is leading the project on behalf of Altitude Angel, added:

"REPORTING AN UNEXPECTED EVENT IS NOT A 'GET OUT OF JAIL FREE' CARD FOR IRRESPONSIBLE OR CRIMINAL BEHAVIOR, BUT IT WILL ALLOW CONSIDERATE PILOTS AND OPERATORS TO LEARN FROM OTHERS >

AND TAKE MEASURES TO PREVENT, OR AT THE VERY LEAST VASTLY REDUCE, THE CHANCES OF THE SAME TYPE OF EVENT HAPPENING AGAIN.

THIS RESPONSIBLE ATTITUDE TO REPORTING CAN ONLY REDUCE INCIDENTS AND IMPROVE SAFETY."

The scheme has the backing of the UK's Civil Aviation Authority (CAA), which is the statutory corporation overseeing and regulating all aspects of civil aviation in the United Kingdom.

"THE CAA ABSOLUTELY SUPPORTS THIS WORK BY ALTITUDE ANGEL AND ANYTHING WHICH INCREASES THE SAFETY OF DRONE OPERATIONS IN THE UK," SAID TIM JOHNSON, CAA, POLICY DIRECTOR. "IT IS VITAL THE DRONE COMMUNITY BENEFITS FROM THE ABILITY TO SHARE AND LEARN FROM SAFETY DATA AS THE REST OF THE AVIATION INDUSTRY DOES."

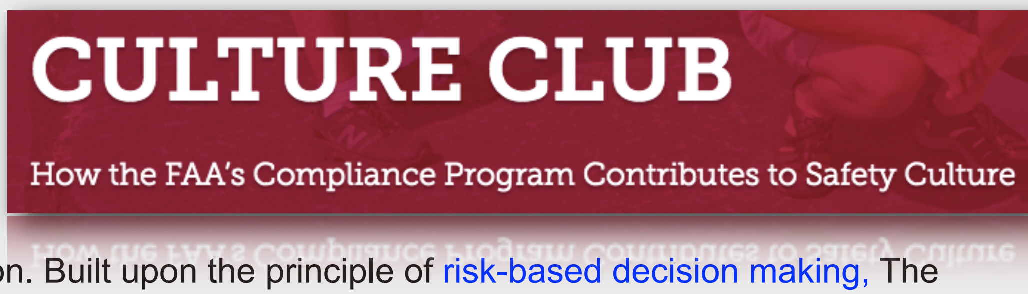
Visit our Incident Reporting Page

New Student Lands 152 After Instructor Blacks Out

A student pilot on his first lesson got some accelerated training in Australia recently when his instructor collapsed in the right seat beside him. Max Sylvester and the unidentified instructor had taken off from Jandakot Airport in Perth in Western Australia when the instructor slumped into the student.

“He’s leaning over my shoulder, I’m trying to keep him up but he keeps falling down,” Sylvester told a controller, who then asked him if he knew how to fly. “This is my first lesson,” was his reply. So instead of spending his first hour learning about the horizon and coordinated shallow turns, Sylvester had a truncated and ultimately successful lesson on approach and landing.“You’re doing a really great job. I know this is really stressful. But you’re going to do an amazing job and we’re going to help you get down to the ground,” the controller said in recordings supplied to the Australian Broadcasting Corporation. The controller guided Sylvester through the basics of getting the 152 on the ground and while it took a few tries, he was able to get it on the runway. His wife and three children were on the ground watching. The instructor was taken to a local hospital where he was reported in serious but stable condition. The nature of his illness was not released.

Culture Club



You need a strong safety culture to address existing and emerging hazards in aviation. Built upon the principle of risk-based decision making, The program focuses on the underlying root causes of a problem and the actions needed to ensure the problem remains fixed.

https://adobe.ly/2xOp5Wd.

You can also go to the Compliance Program website at https://www.faa.gov/about/initiatives/cp/.

Time Out for Safety

A spate of business aviation accidents has discussion boards and Facebook pilot groups asking the question: why have there been so many in recent months, a notable turnabout from last year's far better record? It's not uncommon in the military for organizations to take a break when safety issues rise to a high level, called a "safety standdown." Bombardier's annual Safety Standdown sort-of replicates that concept.

During my career, there have been a few instances where, in retrospect, I should have applied more consideration toward the safety of what I was doing. In thinking about that, I came up with a concept that I named "Time Out for Safety." The idea is that anyone involved in the operation can at any time raise a hand and say, "Time Out!" This stops the clock, halts whatever steps are underway, and forces those involved to rethink the plan.

There are times I should have invoked the time out before it was too late and there are times I did, and I can easily say I feel much better about the latter.

In one case, we had finished preparing a complex piston single for its first flight after an engine change. For some reason, I allowed group pressure to take over and let a bunch of our mechanics go along for a ride with the owner during the first flight. As it took off, my heart was in my throat as I willed the engine not to hiccup. Obviously turning a first flight after an engine change into a joy flight wasn't a good idea, and I learned from that.

Twice I eventually made the right decision while in flight. The first involved a flight to test a single-engine piston airplane that can fly well into the flight levels. It wasn't until after we took off that the demo pilot revealed that we had only two oxygen masks for the three people on board, so we would have to share the oxygen.

As we climbed into the teen altitudes, I finally decided to say something about this being an unsafe operation, that we shouldn't risk climbing into the flight levels without proper masks for each of us. The demo pilot and my boss reluctantly agreed, and we descended.

Another time, while flying to visit relatives with family on board, we thought we were having a problem extending the landing gear in a Piper Arrow. It turned out to be a failure of the dim lighting side of the landing gear position lights, and when I finally wised up and asked my wife to read the emergency checklist, I switched on the interior lights, which caused the bright side of the position lights to illuminate. I should have invoked crew resource management earlier, but at least I finally did so.

I have plenty of examples where I should have used a time out, and some are embarrassing, but informative nevertheless. While test flying a business jet, I accidentally switched off the audio on my side while manipulating the nosewheel steering tiller, just as I was taxiing into position for takeoff. I should have stopped the takeoff and taxied off the runway and fixed the problem, but I continued taking off, which was the wrong decision.

Time Out for Safety works in many circumstances, and not just aviation. An offer by a friend to take a powerboat ride to an island about 15 miles offshore sounded great. The weather was perfect, the sea calm, and it would have been a fun trip for our spouses and children. However, before this trip, someone had stolen all the boat's emergency equipment, including the life vests. I decided that we weren't going to go, which disappointed the kids and my friend, but it wasn't worth the risk.

It's easy to get caught up in the vortex of an activity and go along with events without stopping to think about consequences. This is really what tools such as flight-risk assessment and safety management systems are all about: considering consequences, assessing the risk, and making an intelligent decision as how to mitigate, but ultimately accept, the risk.

Looking at the accidents that have happened this year, it's not hard to think about when a time out might have helped. None of the investigations are done yet, so we have to wait to find out what actually happened.

But it never hurts if when that little voice on your shoulder starts to raise some questions, take a deep breath, ask whether it makes sense to call a time out, and if so, stop the clock (on the ground) or do a go-around or slow down or hold (if in the air) and step back and talk through the situation before making an irrevocable decision.

Why We Lose Control

Loss-of-control accidents aren't always about inadequate skill alone. They also can be about inadequate risk management.

The aviation industry in recent years has highlighted loss of control in-flight (LOC-I) as the leading cause of general aviation fatal accidents. Many aviation organizations, including government agencies, have devoted considerable time and resources to target this problem and develop effective mitigations to reduce the number of LOC-I accidents. Much of that effort focuses on a pilot losing control, and how to train and equip to prevent it, because it's the final event in the accident chain.

It's a no-brainer when we point to loss of control as an accident cause when the stall/spin was preceded by steep turns at low altitude. And technology, training and certification are all appropriate avenues for the industry's efforts to prevent this accident type. Risk management is an important part of that effort—what led the pilot to think steep turns at low altitude was a great idea?—and we may have overlooked poor risk management as a root cause of many—perhaps most—LOC-I accidents.

GA'S Accident Record

The general aviation accident record improved slowly and sporadically for many years, from horrible beginnings in the 1940s right up to around 2000. At that point, accident rates more or less flatlined until 2013. After a blip in 2014, it may be beginning a downward trend again. It's still too early to tell if this trend will continue. The graph below shows the numbers and trends from 1985 through 2016.

This stagnation in the accident rate attracted the attention of both the aviation community and government, including the FAA and the NTSB, who collectively formed the General Aviation Joint Steering Committee (GAJSC), to address these and other concerns. I have recently covered these joint industry/government safety initiatives ("Making GA Safety Policy"), so I won't repeat that discussion. As part of its activities, the GAJSC worked methodically to identify leading GA accident "causes" and to develop mitigations to reduce the number of these accidents.

Based on the data it uncovered from the NTSB's findings of probable cause and the details of associated accidents, the GAJSC's initial effort focused on LOC-I as the leading cause of fatal general aviation accidents. The GAJSC's methodology included forming work groups to analyze candidate accidents, then develop mitigations—safety enhancements (SEs)—to reduce the number of LOC-I accidents. The work groups ranked the SEs by their presumed effectiveness, feasibility and cost using a complex multi-part formula that considered several factors. They then prepared detailed implementation plans (DIP) for the 34 highest ranked SEs. Additional details of these and other GAJSC efforts, plus comprehensive records of its deliberations, is available on the organization's web site: www.gajsc.org.

A Deeper Dive

The thoroughness of the GAJSC analysis of LOC-I accidents presents an open-and-shut case for moving forward with their strategy and approach for reducing these accidents in the general aviation community. Indeed, many of the SEs identified will be effective in reducing LOC-I accidents if they are implemented effectively.

But there also are hidden and not-so-hidden barriers to seeing what's really taking place during analysis of data, as it is with any complex, consensus-based approach to solving problems as complex and dynamic as GA safety.

One of these barriers involves NTSB accident reports and data itself—a foundation of the GAJSC's approach to developing mitigations—which all too often focuses on the final events in the accident chain and not the real root causes of many accidents. I have written about this previously ("Out of Control?", *Aviation Safety*, May 2015). In that article, I analyzed 47 fatal accidents associated with loss of control occurring in 2011. In my analysis, I sought to determine whether poor risk management was really a root cause of these accidents and whether the loss of control was only the result of the poor risk management. That search yielded 47 accidents. Of these, only 37 had enough data to determine whether the accident was a result of poor risk management. I found that 30 (81 percent) of the 37 accidents met my criteria for whether it was a "poor risk management" accident or not.

Four Years Later

At the risk of covering previous ground, I decided to repeat my analysis for LOC-I accidents, using data from 2015. I selected that year because it was far enough back that the NTSB would have completed their final reports on all accidents in that year.

My procedure for selecting accidents was to use the NTSB's own aviation accident database to obtain the final report of probable cause. I selected all fatal accidents for that year by adding the key words "loss of control" in the search request. I limited my search to airplanes only and included amateur-built aircraft. I included all general aviation regulatory parts (Part 91, 135, 137, etc.).

My sample of 2015 fatal accidents yielded 56 NTSB files. Of these, 13 lacked enough data for the NTSB to determine the probable cause and/or had insufficient data for me to distinguish between a root cause involving poor risk management or lack of basic airmanship skills.

One additional accident resulted from a sudden engine failure that could not be attributed to either poor risk management or lack of skill. That left 42 files with enough data for me to make a root cause determination in the manner I described in the sidebar “Root Cause Criteria” below.

Cutting to the chase, my examination of the 42 files showed that 31 (74 percent) of the accidents could be attributed to poor risk management. Of the remaining 11 accidents, I concluded that the root cause of nine (21 percent) were due to poor “stick and rudder” skills while two (five percent) resulted from inadequate instrument-flying skills. I would also note that many of the skill accidents, as well as many of the risk management accidents, had information in the files suggesting pilot deficiencies in other single-pilot resource management (SRM) competencies, such as automation management, task and workload management, and situational awareness.

Each of the 31 accidents that I assessed as due to poor risk management displayed one or more or the four risk categories that comprise the PAVE acronym (for the risks posed by Pilot or Aircraft shortcomings, plus Environment challenges and External pressures). Environment-related risk factors led the pack, being indicated in 23 of the 31 accidents. This was followed by pilot-related (20 accidents), external pressure-related (16 accidents) and aircraft-related (12 accidents). The sidebar “Some Typical Risk Management Accidents” below briefly describes several accidents in my sample.

Effective Mitigations

The results of my analysis are consistent with my earlier study of 2011 accidents I reviewed in my May 2015 article. This time, however, I wanted to dive a little deeper into the data to see if it could give insights into whether the GAJSC-proposed interventions would be effective in reducing LOC-I accidents.

The NTSB describes a “defining event” for each accident it investigates. In my sample of 56 accidents, the NTSB labeled LOC-I as the defining event in 32 of the files.

This was followed by stall/spin and low-altitude operation with seven accidents combined and VFR into IMC and loss of visibility, again with seven accidents combined. The remaining 10 accidents had a variety of NTSB defining events.

I reviewed the 34 safety enhancements that the GAJSC proposed to address LOC-I accidents to correlate how they could have prevented the accidents in my sample. For example, would touting the benefits of angle-of-attack indicating systems on new and existing aircraft make a dent in stall/spin accidents? In my sample, it would be difficult to infer this result when applied to the seven stall/spin and low-altitude operation accidents. Instead, I assessed four of the seven accidents as being due to poor risk management. All these accidents occurred at low altitude, where recovery from a stall would not have been in time to prevent ground impact.

The GAJSC report on LOC-I acknowledges the difficulty in reaching the GA pilot population with its message and products. In response, I suggest the best way to reach pilots would be to standardize instruction and flight reviews so that pilots become familiar with risk management, resource management and aeronautical decision-making (ADM). Each of these three subjects is addressed by an SE in the GAJSC report.

However, none of the SEs provide any assurance that materials such as announcements and articles will filter down to pilots. Nor can they. For example, the statements for both the ADM (SE-3) and SRM (SE-24) safety enhancements promote “raising awareness,” “communicating,” and “promoting” but do not explain how safety information and useful techniques will actually get into pilots’ hands. This shortcoming is all about the GAJSC’s status as an advisory body to the industry and the FAA, with limited ability to force its solutions on the agency.

What's Next?

So, what do I think should be done to reduce LOC-I accidents? It should be no surprise to the reader that I advocate risk management (and SRM) training for all pilots. The new Airman Certification Standards (ACS) require risk management proficiency for all certificates and ratings, but the FAA has yet to issue guidance to flight instructors on how to teach practical risk management. As a member of the ACS Work Group, I'm already tackling that problem.

It's also worth noting that the effectiveness of all the working group SEs depends entirely on how the aviation community embraces, interprets, and follows through on the implementation recommendations for that SE. The GAJSC has committed itself to following through with the detailed implementation plans for the SEs selected for advancement. For more information on the GAJSC's loss-of-control initiative, including the working group's reports, visit their web site at www.gajsc.org.

Meanwhile, here's what you might consider doing to lessen your chance of being involved in a LOC-I accident:

Take a risk management or SRM course. Several of these are available online and will provide you with the background you need to manage risk.

Conduct a risk analysis for every flight. One way to do this is with a flight risk assessment tool (FRAT). The National Business Aviation Association has one available [PDF] online.

Receive a risk-based flight review. Ask your instructor to conduct a scenario-based flight review that includes the most frequent scenarios for loss of control.

Root Cause Criteria

My criteria for determining whether poor risk management was a root cause or not follows the process I have used in previous articles on this subject.

After analyzing the accident report, I determined whether the hazard or event that precipitated the accident was, or could have been, identified, assessed and mitigated by the pilot such that the accident could have been avoided.

For example, an engine failure accident that was preceded by signs of impending failure that the pilot ignored can be at least partially attributed to poor risk management. On the other hand, a sudden engine failure in a well-maintained engine due to undetectable problems is minimally attributed to poor risk management.

Similarly, an accident resulting from a pilot trying to land in a 35-knot direct crosswind in an airplane with a 10-knot demonstrated crosswind component may primarily be attributed to poor risk management instead of skill. On the other hand, if the accident results from a pilot trying to land on a 200-foot-wide runway in calm winds, it is not an accident due to poor risk management but rather an accident attributable to inadequate basic airmanship.

Some Typical Risk Management Accidents

The following seven accidents (labeled by NTSB "defining event") were typical examples of poor risk management in my sample of 56 accidents.

- **VFR into IMC:** The RV-4 pilot departed at night despite an IFR forecast. The aircraft was not IFR-capable. The briefer said the pilot appeared to "be in a hurry."
- **Stall/Spin:** A non-certificated pilot was performing a low-altitude aerobatic maneuver at night and the RV-10 stalled and spun.
- **LOC-I:** The pilot departed in IMC conditions in a Cirrus SR22 with known autopilot and trim problems, lost control and impacted the ground.
- **LOC-I:** The engine on the Great Lakes quit shortly after takeoff, due to fuel exhaustion, during a low-altitude maneuver. The pilot lost control.
- **Stall/Spin:** The pilot of a Beech A36 with four passengers departed uphill from a 2000-foot grass strip with 70-foot trees at the end. Stalled into the trees.

- **LOC-I:** The pilot lost control of the Cessna 414A during an instrument approach in high-workload conditions with inoperative equipment. The aircraft was over its gross takeoff and landing weights.
- **Fuel exhaustion:** The pilot lost power right after takeoff in his Lancair 320 and spun in. The pilot was under pressure to return home.

The 34 safety enhancements developed by the GAJSC LOC-I working group were evaluated and heavily weighted toward new technologies and more liberal FAA certification methods. For example, angle-of-attack (AoA) indicators for new and existing GA aircraft scored high in their evaluation, as did other new technologies and faster FAA certification processes to bring these technologies to market.

It's worth noting that, in terms of total effectiveness, the working group's ranking of SEs showed that interventions such as aeronautical decision-making (ADM) and single-pilot resource management (SRM) scored higher than the technological solutions such as AoA indicators. All that remains is for the FAA and the rest of the industry to find ways to implement them.

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