

Risk Management

Do we know what we don't know?

By Patty Wagstaff (published in *Plane & Pilot*)

Risk management is a solid concept, and an often-used term in aviation, medicine, firefighting, insurance and business. It denotes thought and intellect, decision-making skill and good old common sense. In aviation, risk management is that smart thing that pilots do in all phases of preflight and flight.

Transport Canada's definition of risk management is "the process of identifying risks, assessing their implications, deciding on a course of action, and evaluating the results." Wikipedia defines it as "the identification, assessment and prioritization of risks... followed by coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events."

While managing risk might not be an overly "simple" concept, surely it's something we smart pilots can understand. Or can we? Statistics indicate otherwise.

Educate Yourself

According to the 2010 AOPA Air Safety Institute's *Joseph T. Nall Report*, general aviation's annual review of aircraft accidents, personal, Part 91 flights accounted for less than 47% of noncommercial flying, but accounted for a staggering 78% of all accidents and 84% of fatal accidents. The average accident rate over the last decade is 67% higher for noncommercial flights, and twice the rate for fatal accidents. The fatal accidents are often the best trained among us instrument-rated commercial pilots. Mechanical failures account for very few accidents, only 17% of the total.

Why is managing risk clearly so difficult for general aviation pilots? Why do smart and well-trained people contribute so much to the accident rate each year, continuing to do dumb things like mismanage fuel, fly unprepared into bad weather and fly too low and slow—all leading causes of airplane accidents? Do we know the risks and ignore them? Do we not do enough reading and research into why others have made mistakes? Do we not know what we do not know?

There's an interesting syndrome called the Dunning-Kruger effect. Wikipedia says the Dunning-Kruger effect is a cognitive bias in which unskilled people make poor decisions and reach erroneous conclusions, but their incompetence denies them the metacognitive ability to recognize their mistakes. The unskilled therefore suffer from illusory superiority, rating their ability as above average, much higher than it actually is, while the highly skilled underrate their own abilities, suffering from illusory inferiority. Actual competence may weaken self-confidence, as competent individuals may falsely assume that others have an equivalent understanding. As Kruger and Dunning conclude, "The miscalibration of the incompetent stems from an error about the self, whereas the miscalibration of the highly competent stems from an error about

others.” To put it more simply, let me quote Warren Buffet: Risk comes from not knowing what you are doing.

If learning what not to do is as important as learning what to do, how do we find out what we don't know? I believe pilots are morally responsible to learn as much as possible from incidents, accidents and close calls. In aviation, every mishap, every moment of anxiety in the cockpit, every close call contains a pearl of wisdom.

The stories are easy to find. Hangar flying is wonderful because even if the storyteller tends to exaggerate, we can learn a lot. We can gain knowledge and insight from books, magazines, safety journals and NTSB reports. The United States has the best safety reporting system in the world. Take advantage of it. The FAA publishes preliminary accident and incident reports daily. The NTSB studies and dissects the causes of every accident, and makes its findings available to anyone in the world in a timely fashion. Read them regularly and learn from pilots who have made mistakes, both stupid and honest.

Every time a general aviation airplane crashes, we all get a bad rap and a bad rep. There's one less member of the public who will look up in wonderment and awe at an airplane flying. There's one more noise complaint. There's more fear, heightened anxiety, higher insurance rates, increased legal fees and yet another knee-jerk reaction of tighter rules and regulations aimed at the lowest common denominator. Ugh! “No man is an island.” We can teach each other, we can educate ourselves, we can take it seriously and realize that, like it or not, we're all in this together to keep the skies safe, free and accessible to new pilots.

Cave Diving and You

What, you may ask, does cave diving have to do with flying? Not much. But it has a lot to do with risk management.

Recently, I had a conversation with a friend who enjoys scuba diving in central Florida's intricate system of fresh-water springs and underground caves. When I asked how dangerous it is, he told me that cave diving used to have a terrible and tragic safety record. Since 1950, nearly 400 divers perished in Florida's caverns and caves, most of them having no formal training in cavern or cave diving. From The Cave Diving Website (www.cavediving.com):

In the 1960s and 1970s, cave diving pioneer Sheck Exley conducted a careful study of cave diving fatalities. What he discovered was that, in virtually every instance, the victims' demise could be attributed to one or more of just three direct causes. Later, National Speleological Society Cave Diving Section (NSS-CDS) Training Chairman Wes C. Skiles identified two additional factors that, while not directly responsible for divers' deaths, nonetheless contributed substantially to most such fatalities. Together, the findings of Exley and Skiles form the basis for what cave divers know as the Rules of Accident Analysis.

Stemming from this study, there are now five sacred safety rules in cave diving that have, according to cave divers, significantly changed and improved the safety record in cave diving:

- 1 Be trained for cave diving and remain within the limits of your training.
- 2 Maintain a continuous guide to the cave exit.
- 3 Keep two-thirds of your starting gas volume in reserve to exit the cave.
- 4 Remain within the safest possible operating limits for your breathing media.
- 5 Use three sources of light.

The idea is if you follow all of the rules, your chance of survival is 100%. If you ignore one of the rules, your odds go down by 20% and your chance of survival is only 80%. Ignore two, and your odds go down to 60%. Ignore three, and it gets scarier. What a fine example of risk management! Can we use this model to help manage risk in aviation this way?

Let's substitute the five safety rules in cave diving with aviation tenets:

- 1 Be trained for flying and remain within the limits of your training.
- 2 Maintain a continuous monitoring of fuel levels and safe operating limits.
- 3 Keep one-quarter of your starting fuel capacity in reserve to guarantee a safe landing.
- 4 Remain within the safest possible operating limits for your type of airplane and equipment.
- 5 Make sure to leave yourself an out.

What are your odds when you get in your airplane? Are they 100%? Would you start the engine if you thought you and your passengers had only an 80% chance of surviving the flight? If your odds aren't 100% for every flight and every phase of the flight, then stay on the ground and figure out how to make the odds work for you.

Patty Wagstaff is a six-time member of the U.S. Aerobatic team, and a three-time U.S. National Aerobatic champion. She flies for the California Department of Forestry during the summer months.

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Gavin Wills, of Glide Omarama, has adapted Patty's five caving/aviation rules to apply to gliding as follows:

- 1. Be trained for soaring and remain within the limits of your training.**
- 2. Maintain a continuous monitoring of the atmospheric engine.**
- 3. At all times stay within 75% of your glide slope to a safe landing.**
- 4. Remain within the safest possible operating limits for your type of glider and equipment.**
- 5. Make sure you leave yourself an out.**