USING PERSONAL MINIMA TO KEEP YOU ALIVE

BY

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We often hear of pilots getting themselves into trouble as a result of poor decision-making. Instructors are told that part of their job is to teach good decision-making as part of the curriculum. Pilot examiners are urged to test a pilot's judgment prior to issuing a new certificate. But the process of developing a pilot into someone who makes sound decisions about safety is a complicated one, and how this process is to be implemented is not clearly explained in the textbooks instructors use.

Weather often seems to be a factor in many poor pilot judgments that lead to accidents. In ground school, we learn the characteristics of air masses and fronts, how coriolis force affects wind direction, and how often METARS are issued. We learn the definition of a ceiling and the difference between prevailing visibility and flight visibility. But the subject of what is safe, versus what is unsafe weather is not always clearly delineated. Students find themselves memorizing technical terms from their flash cards and making a passing grade on a multiple-choice test without having to deal with what weather conditions are and are not safe.

Then comes the practical test. You can't be too conservative when you're talking to an examiner. "I wouldn't go" seems like a pretty safe response to a weather

scenario set up as part of the test. Within the limitations of the practical test standards, the term "judgment" is mentioned, but only in a general way.

Some clarity and simplification seem to be in order, to guide pilots as they embark on the life-and-death decisions that guide their actions.

Consider the story of a vacationing family. They have traveled from New Orleans to Boulder, Colorado in a Cessna 172. The weather was good for the westward part of the trip. It was an easy two-day flight with an overnight stop in Oklahoma City.

This gentleman and his wife have spent two weeks in the Rocky Mountains, hiking and having lots of fun. They are due back in New Orleans by a certain date. The wife is a college instructor, and she must meet the first class of her fall course on the day after they are to return. The husband is a lawyer. He is due back for an important court appearance before a judge who has a reputation for impatience. The kids have been at summer camp. They'll be coming home two days after the parents' return date.

These folks have some very common reasons for wanting to arrive home on or before a particular date. They think it is normal to do what they are supposed to do, what they have agreed to do. They are set up for get-home-itis, a disease that afflicts all aviators, sooner or later.

In times like these, it is good to have rules, called personal minima. These rules are guidelines for making decisions when pilots are afflicted with the strong desire to go.

The law gives us scant guidance when it comes to prudence in these matters. If we are capable of filing an IFR flight plan and of receiving and complying with an IFR clearance, there is little we are forbidden by law to do. We must carry enough fuel to make it to our destination or to the destination, plus an alternate, with a small amount of reserve fuel remaining. It is left up to us, the decision-makers, to judge the safety of a weather situation, and then to act rationally on that judgment. Conditions that put us under pressure to go can degrade our ability to act rationally, particularly since we often do not recognize these kinds of pressure for what they are.

I suggest that it might be a good idea to take out the go/no-go decision and dust it off at a time when there is no pending need to make such a decision. Personal minima should be arrived at when we are free of get-home-itis. It should be an exercise in pre-decision-making that is as insulated as possible from the desire to fly.

What combination of factors would inform such a rational, disinterested decision? Let's start with the easy stuff. Ice is a good example of a categorical no-no. A forecast of ice or pilot reports of ice or knowledge of visible moisture (clouds) at or slightly below freezing temperature should shut down the weather briefing with a nice "thanks, I'll call you back tomorrow."

Embedded thunderstorms represent another briefing terminator, in my opinion. Talented amateurs sometimes make themselves dependent on ATC to keep them out of cells they cannot see, but that is not ATC's job. Also,

consider that even though the controllers' weather detection equipment has been improved in recent times, the essential job of that equipment is to display traffic, not water droplets. If these considerations do not deter you, contemplate the words, "radar contact lost" or "radar service terminated," when you are in the middle of a forest of cumulonimbus clouds. Cells I cannot see constitute no-go items for me. Nosing around thunderbumpers at night is another practice that seems to me not to be worth the risk, if the only avoidance gear you have aboard is your eyeballs.

If this type of logic has just eliminated thunderstorms and ice as hazards, what factors remain, to inform the rational decision? Under Part 91, a zero-zero takeoff is apparently legal, since there is no mention of standard takeoff minima in this section of the law. If there is no critical malfunction of the equipment and no lack of ability in the pilot, there should be no practical reason why one could not take off with zero ceiling and zero visibility. If this proposition seems logical to you, you might want to leave off reading at this point, since what I am about to say will probably not persuade you not to do it.

The air taxi guys, who operate under Parts 135 and 121 of the law, pretty much need a mile visibility before they can take off, or a half-mile, if they are flying an airplane having more than 2 engines. These are professional pilots who are required to submit themselves to recurrent training and testing, in order to maintain their

commercial flying privileges. Should the amateurs flying under Part 91 and their passengers be constrained by any less stringent weather minima than their professional cousins? I think not.

It is this line of thinking that led me to determine my first personal minimum. I promised myself and all of my future passengers that I would never depart with less than a mile visibility. I would never find myself charging down a runway, unable to see a pickup truck or another airplane crossing ahead of me in the clag.

A few years later, an event which unfortunately killed one person, injured another, and destroyed an airplane, led me to expand my safety criteria. This flight was conducted, as far as I know, under legal conditions according to Part 91. The aircraft was IFR equipped and the pilot was IFR qualified and current. At some time after takeoff, the airplane's only engine quit and the pilot found himself gliding down on instruments, hoping to break out of the clouds in time to find a suitable place to make a forced landing.

As I understand the story, they broke out of the clouds below treetop level, way too low to permit maneuvering toward a safe landing place.

That incident got me to wondering what minimum height and visibility might give me a fighting chance of finding a place to park the machine, if such a mishap should occur in the clouds.

There is no perfect answer to that question. Insisting on very high standards, such as 3000 foot cloud bases and 5

miles of visibility, seems to restrict us to operations better conducted under VFR. So I chose 1000 feet for my cloud base and 3 miles for my visibility standard. I figured that these conditions were low enough that I'd rather go IFR, but high enough that I might be able to accomplish a forced landing, should the worst happen.

If you are thinking that having a catastrophic engine failure is a very remote possibility, I must agree with you. I have been a pilot for over 50 years, and have spent over 2 of those years aloft in small aircraft. I have had only 4 occasions when a problem was bad enough so that I had no choice about putting the bird on the ground. In each of these cases, the cloud heights and visibility were not factors, and I found myself in gliding distance of a safe place to terminate my flight.

Different pilots will reach different conclusions when it comes to risk management; but in my opinion, life is very short, and I am not as prone as I used to be, to give the Grim Reaper an opportunity to do his job.

So 1000/3 is now the answer for me. When I am under pressure to go, whether or not I realize that I am under that pressure, I still must answer to my non-pressured self before I undertake a flight in a single-engine airplane. Here are some questions which must be answered in the negative, before I'll seriously consider departing terra firma:

Are there any reports or forecasts of structural icing along or near my route of flight? Are there clouds at

altitudes where I might be flying, where the temperatures are at zero degrees celsius or lower?

Are there any cumulus buildups and/or thunderstorm cells anywhere along my route of flight that I won't be able to see for any reason (i.e. night or cloud obscuration)?

Are cloud bases anywhere along my route of flight reported or forecast to be less than 1000 feet above the surface?

Are visibilities reported or forecast to be less than 3 miles anywhere along my route of flight?

And one other question requires an affirmative answer: Do I have enough fuel to get to my destination with at least an hour of reserve, according to my best analysis of ground speed and fuel consumption of the airplane I'm flying?

It is tempting to push these minima. I'm sitting in the pilot lounge in Beaumont and the cloud bases are 500 feet, with 2 miles visibility. Tops are reported at 2500 feet, and it's clear above. East of Lake Charles the clouds have broken up, and it's clear beyond Lafayette. I have enough gas to depart Beaumont, fly to my destination of New Orleans, and fly all the way back with plenty of reserve fuel. We have a date with another couple tonight to hear Fats Domino give his final concert. The other couple is paying for dinner. But we have to leave in the next few minutes, or we're going to miss out on this fabulous evening.

You get the picture. The hard part is not selecting the safety standards. The hard part is adhering to them when

you're under pressure to go. The hard part is persuading yourself that you had better judgment when you formulated your personal minima than you do now, when you very badly want to get the show on the road.

Anything less than totally slavish adherence to your personal no-go standards renders them useless. If you violate them, you may as well not have them. If you get away with it, as you almost certainly would, in the situation described, you will be sorely tempted to do a cost-benefit analysis in the future, allowing yourself an exception to your rules, rendering personal minima moot.

If you look back with regret at missing Mr. Domino's performance you may want to consider revising your numbers. It could be, on sober reflection, that you decide you are being too conservative. Fine, go right ahead and change the numbers. But remember, these are numbers to live with. They should be changed only when you are under absolutely no pressure to go. After that, the new numbers must be obeyed, *100% of the time*.

So this is my answer to rational decision-making. There are obviously other factors that might be brought into the process. But the central imperative of this method is to insulate yourself from pressure, then decide on reasonably doable minima, and then to adhere to them, always.

Finally, recognize that it is when you are under the greatest pressure to go that it is most important to follow your personal guidelines for making safe judgments about the weather.