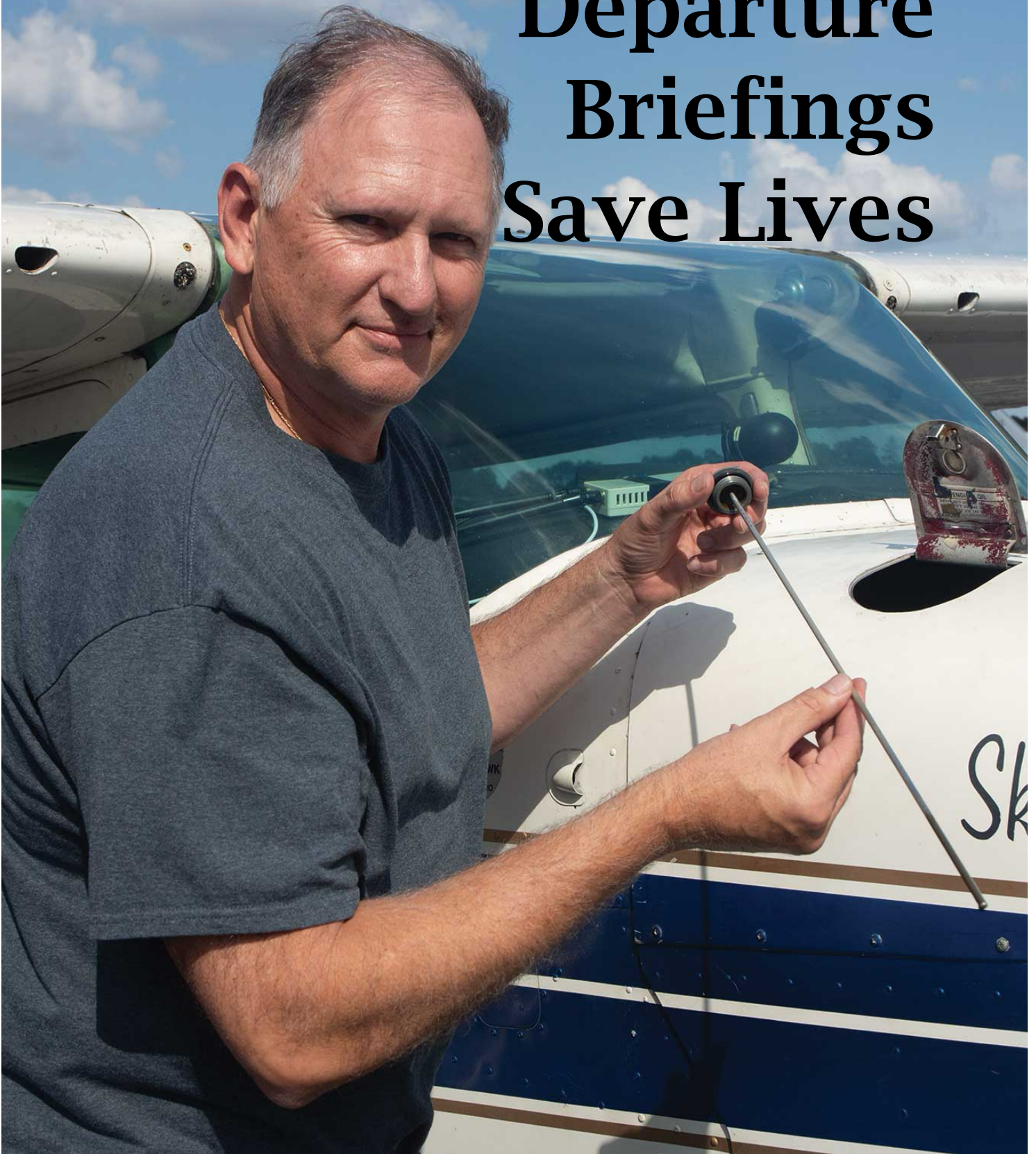


Professional Departure Briefings Save Lives



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By Mike Jones

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Years ago, when dinosaurs still roamed the planet, my almost-sainted wife agreed to fly with me from our home in Connecticut to visit relatives in Seattle. The appointed day arrived blue and serene and off we went. We stretched our legs in western Pennsylvania and overnighted at a small, threadbare G.A. airport outside of Chicago. I felt like Sky King, master of the airways.

The next day, I preflighted, computed my weight-and-balance, and filed IFR. We taxied to the 2,500-foot runway and, clearance in hand, thundered up the slightly-rising concrete, straight at a traffic light just outside the fence. Everything was in the green.

We hit a seam in the concrete and the nose bounced. The next seam bounced even worse. Pretty soon the plane was flopping like a mackerel on the deck of a fishing boat. It felt like we were inside a tumble-dryer. The shaking was so severe the altimeter fell out of the panel.

Belatedly, I rejected the take-off. I pulled the power to idle, raised the flaps, and jumped on the brakes. But 4,000 pounds of aluminum and steel has a mind of its own; the big bird was reluctant to slow. The tires squealed. I braked harder. The traffic light loomed large. I braked even harder. I pulled the yoke into my lap. Chain link fencing filled the windscreen.

Finally, the plane got the message. The engine died. The prop stopped. We rolled to a halt, perhaps twenty feet from the end of the pavement. The altimeter clanked lifelessly against the panel. The traffic light turned red. My wife and I sat for a minute, taking it all in.

“Wow, that wasn’t what I expected,” she said to me breathlessly. “Was it good for you, too?”

I married a good one.

Runways and Threats

This event came to mind after watching a lively “challenge” video from The Pilot Workshop (pilotworkshop.com) about engine-out emergencies immediately after take-off. The correct answer was simple: do what you decided to do in your pre-take-off briefing.

Huh?

I’m flying single-pilot 99% of the time. What departure briefing? What’s to brief? Who’s going to hear it? What’s the point?

Turns out, there is a lot of wisdom in that simple suggestion.

I wanted to discuss the question with people who get paid for flying. Philip “Slim” Thompson is a bear of a man, slightly stooped from years of squeezing into too small airplanes. He’s an Air Force Academy graduate who flew KC-10 tankers. Another flyer I respect is Joshua Bingham, a long-time flight instructor now flying right seat for Piedmont Airlines in the sexy Embraer 145. My friend Nathan Patton is the picture-perfect pilot: handsome, with a trim haircut and a



Slim Thompson has more than 16,000 hours in his logbook and owns two flight schools.

gentle smile. He's joining the regionals this summer and enjoyed a long career flying helicopters for the Army. John Machamer is a retired captain with a major airline who flew the biggest planes over the widest oceans. He knows his way around an approach plate. And Ken Haelein has enjoyed a marvelous career flying helicopters in the Coast Guard followed by a decades of flying charters in King Air twins and Gulfstream jets. All five of these people are pros, in the best sense of the word.

All of them advised me that the pre-departure briefing was essential. It is distinct from all the other pre-flight planning, such as pre-flying the airplane, getting the weather, and developing a thoughtful flight plan. It turns out the pre-departure briefing is the tool the pros use to properly execute the first ninety seconds of each flight.

“It may be an in-flight emergency but we’ll figure it out when we’re up there. The first thing is fly the airplane.”

— Joshua Bingham

Bingham's pre-take-off briefing begins long before the runway. The big picture, Bingham explained, is to be looking for threats, be they the weather, traffic, airport, ATC, maintenance, or whatever.

“We actually brief any threats before we go into any flight details,” he told me. “We start at the gate and brief the weather around the airport. We brief the potential taxi route and hot spots. And we don't just say, oh, there's a hot spot here. We examine why it is hot.”

Thompson's pre-take-off routine is tailored for the smaller airports from which he usually flies.

“I always brief the runway,” he said. “What runway are we taking off? What’s the length, the width? Are there any obstacles? At what point am I going to stop the aircraft or go into the air?”



Nathan Patton had a long career flying Apache helicopters for the Army and is expecting to be flying for a regional airline before this article goes to press.

Bingham uses a specific process to enter any runway. First he checks for arriving traffic and verbally announces the runway’s condition to the other pilot. Then he checks the departure direction, looking for ground vehicles or a plane still on the runway. As a final step, he calls out the runway they’re entering. The whole process takes less than ten seconds: “Runway clear to the south; runway clear to the north; we’re good to enter runway 36.” Simple but powerful.

The Static Take-Off

“As we get to the takeoff stuff, one of the best things we do is talk about the expected performance of the airplane,”

Bingham told me. “How is it going to be configured? What’s the performance going to be? We brief our procedures and our callouts. Which makes it easy to say, if everything goes according to plan, we’re going to be doing this, this, and this.”

The number one advice Thompson would offer is to always confirm the airplane is ready to fly. “That first thousand feet — that’s your most dangerous time,” he said. “It’s really important you don’t take a bad plane in the air.” Instead, he recommends a “static take-off.”

The static take-off starts at the end of the runway, as close as possible to the grass. “You’ve got the whole runway in front of you, as much as possible. Slowly add the power, over about three seconds, while you’re holding the brakes. Check the gauges, really look at the gauges,” Thompson cautioned me. “Check you’ve got take-off power set and confirm everything is all green. Now you’re ready to fly.”

It also makes sense to be fully prepared. In today’s world there are a surprising number of accidents on upwind, which should be the simplest phase of the mission. The well-prepared pilot doesn’t do anything on upwind but climb, maintain a heading, and manage the systems. But today, with fancy avionics, people start having “button sex” and forget to fly the plane.

“They’re rushing their departure and don’t get their stuff set. They’ve got their heads down and realize, ohh, crap, I didn’t put the squawk in,” Thompson said hypothetically. “Then they load the departure, they’re loading frequencies, they’re setting the autopilot, and maybe turning to a heading. They’re so busy, they take their hands off the throttle and the power rolls back on them. Next thing you know they stall. It’s classic: garbage in, garbage out.” An excellent example of the opposite kind of flying — being ready for anything — is related by Ken Haelein, in the sidebar to this article.

The Take-off Roll

Machamer explained his airline breaks the departure into four brief segments: the initial roll-out, the high-speed regime, the rotation, and the climb out. The response to any emergency will vary depending upon the segment of the take-off.

For Bingham, flying the sporty Embraer jet, the initial roll-out extends from zero to eighty knots. At those speeds, either pilot can reject the take-off for any reason. “Suppose we get a caution warning, like high oil temperatures. You

always reject.” It’s an easy decision because the crew already has agreed upon the guidelines.

From eighty knots to V1 (the speed at which the airplane can fly on one engine) is the “high-speed regime.” Aborting the take-off could be perilous. Machamer and Bingham both agree that once the plane is in the high-speed regime, a take-off should be rejected only for one of three reasons: an engine failure, an on-board fire, or the perception of the aircraft is unable to fly.

“Anything other than those three conditions, we’re taking it into the sky,” Bingham said. I protested the wisdom of taking a maybe-broken airplane into the sky.



The most dangerous portion of any flight is the ninety seconds from starting the take-off roll until reaching pattern altitude. If anything goes wrong in that regime, you’re often too low, too slow, and too surprised to respond in a timely manner.

“Yes, maybe there’s something going on. Maybe I’m about to lose that engine, right?” Bingham acknowledged. “But at that moment, I haven’t lost it yet. Right now, I still have two good engines. The aircraft is able to fly, I’ve got a ton of speed, and not a lot of runway. I’m not gonna reject. It may be an in-flight emergency but

we’ll figure it out when we’re up there. The first thing we do is fly the airplane.”

Thompson refers back to his experience flying heavy Air Force tankers.

“Think about all the energy that has to be absorbed by the brakes to stop a 600,000 pound plane. Once you get that much momentum, it’s just easier to go.

And, you know, it isn't such a big decision if you made that decision in the brief. You don't have to think about it."

Machamer would agree with Bingham's analysis and adds the perspective of a senior captain. "Most pilots have not thought it through," he answered. "Say they get an unexpected vibration, maybe due to a failed tire. They abort when it would be safer to take the airplane flying. Here's the answer: If the airplane continues to accelerate and you can keep it tracking down the runway — take it airborne."

"Even Boeing's literature will tell you to take the plane into the air. They build those planes to fly, and they're incredibly robust," Machamer added. "The nacelles are built to contain a blade separation. All the systems have triple-redundancy. The fire suppression is unbelievable. With all that engineering on your side, Boeing feels a take-off, even with an engine fire, is a safer and more controlled experience than running off the end of the runway."

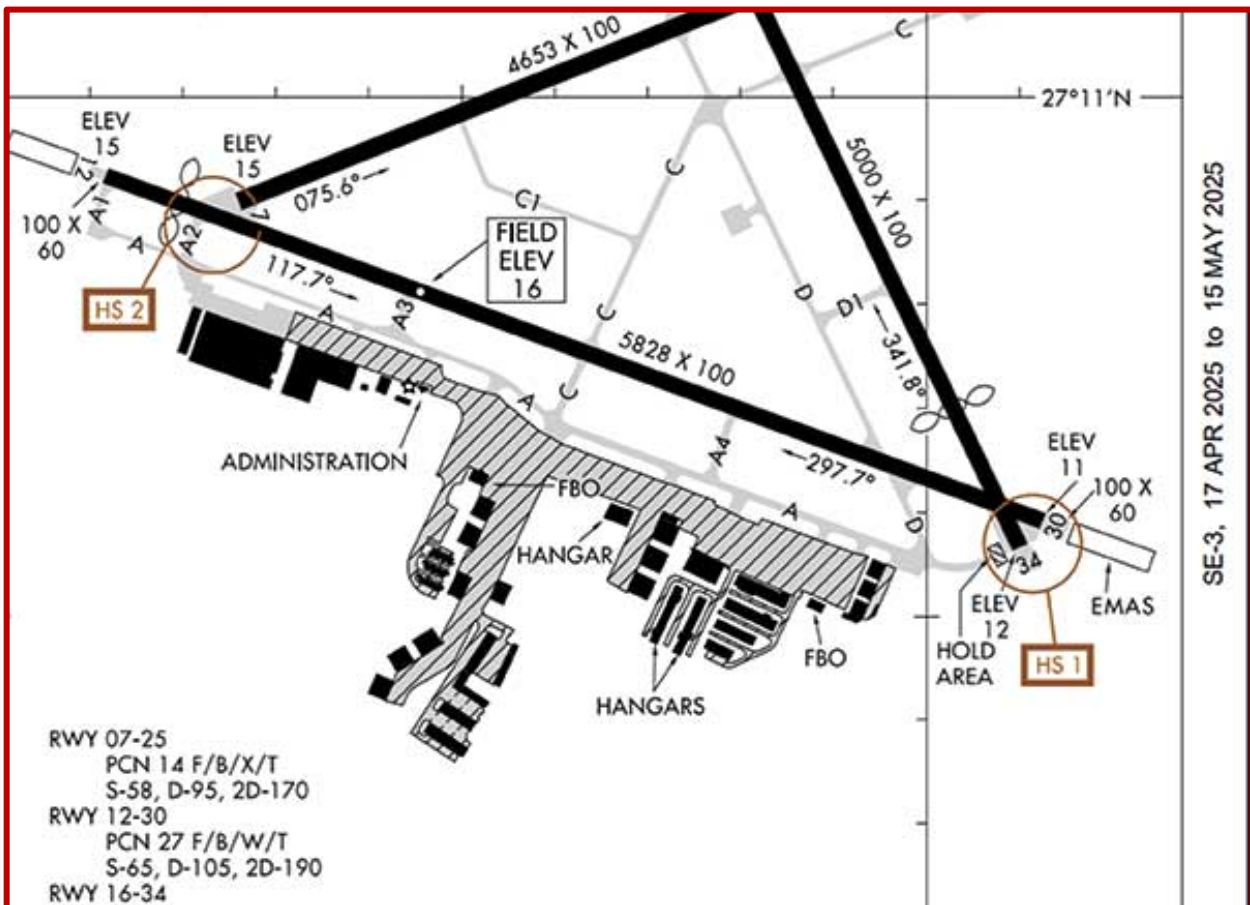
Emergencies

Patton says his routine has changed since leaving the Army but not the discipline. "I'm always thinking, what if that big fan on the front stops spinning? Knowing the right reaction to an emergency in each phase of flight is vital," he explained. "They should be fixed behaviors. No second-guessing. Have a plan, fly your plan. In that regard, the discipline of my military training has carried over to my G.A. flying."

Thompson agrees. "It's good to not have to think about stuff during the takeoff, because we've already made-up our mind about what we're going to do."

Applying this policy to G.A. flying becomes highly situational, depending upon the airplane, the runway, the weather, and pilot's expertise. Bingham

suggested the go/no go speed on a single-engine Cessna might be 45 knots. In my Centurion, I use 65 knots.



This is a section of the airport diagram for Stuart, Florida (KSUA). This airport has two significant hotspots which can trip up the unwary pilot who doesn't perform a thorough pre-take-off briefing. In particular, Hotspot #1, where Runways 30 and 34 intersect, can be confusing and dangerous; don't ask me how I know this. Professional pilots confirm they're using the correct runway by checking the painted runway numbers, the signage, and the heading on the compass.

Once airborne with a bona fide emergency, G.A. pilots need to get the aircraft into the right configuration at the best glide speed. If you have at least 1,000 feet of altitude you may want to return back to the field. Anything lower than that, your strategy is to drive the aircraft into the softest thing you can find. The insurance company owns your airplane; the goal is merely to survive. Thompson said, "Slowly flying into stuff usually does not kill you. It's stalling that kills people. The drop will kill you every time."

"In G.A. flying, with relatively long runways, rejecting is the safest decision if I don't know exactly what's going on. Is that vibration the engine? Or a flat

tire? Or the prop out of balance? Nobody knows,” Bingham said as he mulled over the situation. “I think about BQ1 [a local G.A. airport in North Carolina with a 2,500 foot runway and a popular restaurant—Editor], if you lose your engine there, you’ll have less than a thousand feet of tarmac. There’s nowhere to go. You’re going to eat some trees. So I say, if something happens [before decision speed], I’m going to kill it and stay on the runway. Otherwise, I’m going.”

How does all this cogitation translate into worst-case planning? Allow me to summarize a consensus of the four flyers, using my Centurion as a test-case.

- ◆ First, an emergency below 65 knots is an abort, an easy decision and very manageable except on the very shortest runways.
- ◆ An emergency above 65 knots calls for getting into the air. If the engine dies, pull the nose up to the best glide speed (80 knots in my plane) and fly more-or-less runway heading with the goal of hitting something soft.
- ◆ Above 500 AGL with a dead engine there is a little more flexibility; I may turn up to 30° to optimize my chances with the off-field landing.
- ◆ And above 1,000 AGL? Slow to best glide and try to return to the field, which will require a 180° turn and usually 800-1,000 feet of altitude.

Plan Your Flight, Fly Your Plan

Putting all this into a specific process took some head-scratching on my part, but I have flogged my grey cells into a departure briefing that works for me and my airplane. This assumes that all the earlier pre-flight planning has been properly accomplished: flight plans, inspections, safety briefings, weather, clearances, and so on. These days, I brief myself while taxiing towards the departure end of the runway. I call this briefing procedure “CRATE” for Crew, Runway, Airplane, Take-off, and Emergencies. The details are included in the sidebar.

And what happened in Chicago, you ask? The cause was an over-inflated nose wheel. It was about 30 pounds over-inflated. That tire was rock-hard, and instead of absorbing the bumps in the concrete runway it rebounded from them. It was a classic case of the “plane not wanting to fly” and by sheer luck I made the right decision.

But luck, we all will agree, is a terribly unreliable co-pilot.

About the Author

Dr. Mike Jones has been writing for this magazine and other aviation journals for a decade. He flies a 1979 Cessna Centurion and has flown 800 Young Eagle missions, about a hundred AngelFlights, and put 4,000 hours in his logbook. Email him at PilotMike2012@gmail.com.

