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IFR®

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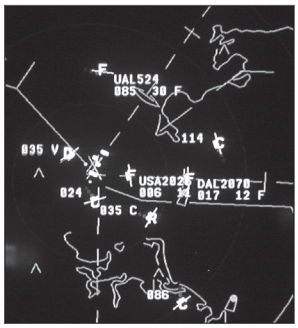

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ture conspire to create a blind spot ahead and below your airplane. Unless you're flying a bubble-nose H-13 helicopter of MASH fame, you have some sort of cutoff to work around.

Although we could get into some serious trigonometry, my advice is simple. Go out in good weather while intentionally and consistently placing your seat where you feel comfortable flying but also can maximize your over-the-nose visibility. Practice spot-on ILS approaches and diligently note how much of a MALSR, for example, you can see upon reaching DH.

Because the centerline bars are spaced every 200 feet on the MALSR, and you know the roll bar lives 1000 feet short, you must create a modified measuring stick to use when visibility is low. Often you only pick up two or three RAIL strobes. The rest will be hidden. That's OK, but waiting to flesh out this concept on a grey, gusty day is not the way to go.

The Take Away

Approach lights are an often overlooked tool in the instrument game. I'm sorry to say that my experience has been that very few pilots genuinely understand what they're saying when they toss around terms like ALSF-2 or MALSR.

That may be OK if you never fly in the soup, but the truth is that everything we practice in instrument flying is geared towards placing the airplane in that narrow slice of sky where the approach lights can be picked up and the landing accomplished.

Accurately pre-briefing the lights and your plan for arrival minimums is part of, as John McCloy would say, "snatching the pebble from the hand of Mother Nature." Of course, if you don't, you may still stumble through it. But accidentally lining on a gang of paparazzi isn't the way to get your star on the Walk of Fame.

Ken Holston is an IFR *Contributing Editor and a 767 F/O at a major airline.*

GO/NO-GO IN TODAY'S GA

Do high-end avionics and safety equipment affect the go/no-go decision? You bet. The real question is: Should they?

By Scott C. Dennstaedt

Technology can make our flights easier and safer, as long as we're aware of the limitations and are actually trained to use the technology. Technological breakthroughs rarely make things simpler right out of the box. In fact, technology can initially be a hindrance or may provide a false sense of security.

Technology has changed the way we make a stay-or-go decision and it alters what we might do in the air when confronted with a challenge. The painful truth is that it's not all roses. New technology demands a new respect.

Chute Happens

The Cirrus Airframe Parachute System (CAPS) is standard equipment with every Cirrus aircraft sold. Assuming that CAPS is used swiftly and within published guidelines, CAPS takes away some of the worry associated with a catastrophic engine failure, incapacitated pilot, instrument failure in IMC, or sudden loss of aircraft control. Activating CAPS is an option that is available to all Cirrus pilots when things go terribly wrong.

CAPS aircraft have a distinct advantage over aircraft without an airframe parachute. Think about an engine failure at night. If you can't glide to an airport, CAPS might be your best chance to survive. The same is true while flying over an area reporting 500 overcast where, short of a miracle, there's little chance to safely fly the airplane onto the ground. CAPS even gives a non-pilot passenger a chance to survive if the pilot is incapacitated and can't fly the airplane.

A side-effect of this technology now floats to the surface. Does CAPS

Below: *Cirrus paved the way for parachutes in certified light airplanes and helped define the technologically advanced aircraft. Now that thousands are flying, are we seeing a new attitude toward risk?*

SHOULD I STAY OR SHOULD I GO?

The Clash put this question in the minds of millions in the 80s. I find it ironic that a clash of sorts is now brewing regarding GA escape systems. A cloud of emotion and controversy has been churning in the CAPS-equipped community as pilots debate their rationale for operating these aircraft as though they're different.

The argument is based on the principle that if a life raft permits over-water operations, then a parachute surely allows flight into some icing or over rough terrain. I'm convinced that a minority of this group will, in the final seconds, never pull the handle, perhaps due to ego or anxiety over the financial ramifications. Truth is that when a situation deteriorates to the point where the handle looks like a good option, there's little room for emotion or controversy. The decision must be thought out long before departure.

This discussion isn't new. The military has been in the escape system business for decades and they'll be the first to state that having a seat, capsule, or parachute doesn't ease the go/no-go decision. Actually, the opposite is true. They're apt to cancel a flight if conditions are OK for the airplane but won't allow for a successful ejection, such as strong crosswinds that could drag a downed pilot. They also understand that some instances clearly call for the handle and make clear that pulling it is not a reflection of a pilot's abilities — an attitude the insurance industry must mirror.

All escape systems have limitations. Certain altitudes, sink rates, and speeds nearly guarantee an unsuccessful deployment and the prudent pilot will minimize exposure to these ends of the performance envelope. Understanding these shortcomings should play the greatest role in an emergency training program.

And when is it OK to deploy the 'chute? Do so when your ability to fly the airplane is in such jeopardy that you're convinced you'll suffer greater injury by continuing to fly than you will by using the escape system. In a perfect world, you'll remain within the deployment envelope for the handle pull. This basic premise applies to any system: ejection seats, CAPS, BRS, or backpack parachutes.

I won't pretend that recognizing the crossing of this potentially deadly line is easy. Considerable time must be spent "what-iffing" the top confidence shakers including loss of control, structural failure, or power loss. It's only through a comprehensive study of the capabilities of your airplane and your particular system that you can go about defining a sensible operating envelope. Sometimes the correct decision may be one that cancels or re-routes the flight.

As for the emotion and controversy, they're counterproductive. It's distressing to think that pilots would use emotion to justify operational decisions. As financial whiz Jim Cramer says, "Hope is not a strategy." When it comes to, "Should I stay or should I go?" remember the decision starts well before the flight and, as best as possible, remains within a thoughtful set of predetermined guidelines. Operating to the contrary only invites a clash with gravity — and that's a tussle best avoided.

— *Ken Holston (an* IFR *Contributing Editor with ejection-seat experience)*

change the way Cirrus pilots make a stay-or-go decision? For some it does. It becomes a safety net for higher risk situations.

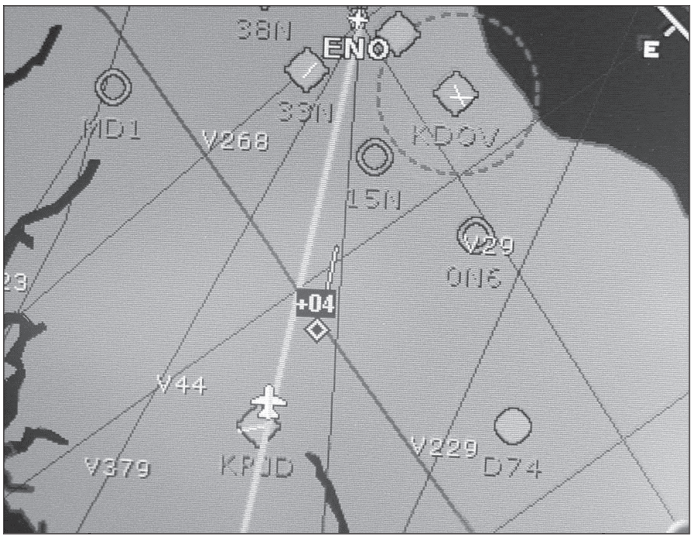
Flying over icing conditions is a good example. It's a slightly elevated-risk mission. When you hear a big thud and your oil pressure unexpectedly drops, you are not going to stay above the icing layer just hoping things will get better. Even if you can safely glide to an airport, you've got to make it down through a thick deck of clouds containing supercooled liquid water. CAPS gives you an out if icing wins out during the emergency descent.

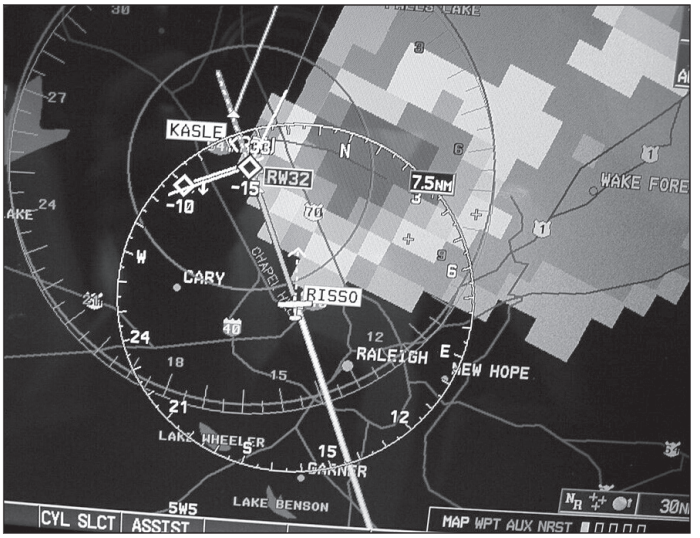
Some Cirrus owners will tell the world that they'd make the same exact decision regardless of having CAPS. But, "If I run into problems, I'll just pull the 'chute," is a phrase I've heard more than once. No Cirrus pilot departs in the morning thinking that they will be the next CAPS "save." Every Cirrus pilot needs to think long and hard about what the 'chute really means to him or her. Is it a safety net for higher-risk operations? Or is the system just an extra method to try and save the day in the face of fate?

Ice protection offers a similar debate. These systems are not new. Pneumatic boots have been around for many years, but rarely appeared on the average four- to six-seat piston aircraft. Newer systems such as TKS or Columbia's E-Vade Thermawing are standing out as the latest and greatest technology.

Many of these installations are not certified for flight into known icing. However, it appears that pilots are using ice protection systems such as these to fly into known icing. A small percentage of pilots assert that flying through a subfreezing layer of clouds that is two- or three-thousand feet thick is harmless. Ninety-five percent of the time that's true, but the pilot must know for certain that the layer is only two- or three-thousand feet thick.

Where systems like this shine, however, is flying above a layer of icing. The pilot is in clear air with ic-





Above: *Those MFDs are great but have limitations. On the left image, traffic is at our 1:30 position, 400 feet above our altitude (+04) and appears to be tracking V213 toward the ENO VOR (based on the intruder's track leader line). The intruder doesn't constitute an immediate threat. However, Mode S traffic information systems (TIS) update aircraft locations every 4.6 seconds and* predict *the position. Errors may occur when either aircraft is maneuvering. TIS may not identify traffic while operating more than 60 miles from Mode S radar in the traffic pattern at a satellite airport. On the right image, a thunderstorm parked over Raleigh-Durham Airport (KRDU) has you holding. You can see approaches to Runways 5 and 23 don't make sense given the location of the storm. The RNAV Rwy 32 will be your best bet. Don't become complacent. The NEXRAD image you see could be three to eight minutes old —just a glimpse into the recent past.*

ing conditions below. In the unlikely event an urgent condition occurs that forces the aircraft to descend down through the layer of icing below, these systems will provide the ability to get on the ground safely.

LCD Goodies

New technology requires training by qualified instructors. Reading the manual or operating handbook isn't enough. Trial and error isn't the most efficient and cost-effective way to learn.

Let's say you have just purchased a used Columbia 400 with a Garmin G1000 avionics suite. If you've never owned an aircraft equipped with a G1000, you will most likely spend the time reading through the G1000 pilot's guide and you'll want to spend some time with a Columbia factory instructor. If you previously owned a Cessna 182 equipped with a G1000, then you are golden, correct?

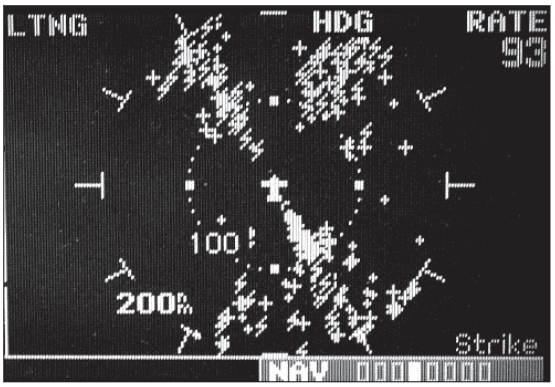
Not so. You're a step ahead with experience in the G1000, but there are differences that need to be explored. The Flight Level Change (FLC) function of the GFC 700 integrated autopilot catches pilots by surprise. It works great for climbing at a constant airspeed, but when they use it on a descent, they forget to reduce the power and the airplane doesn't go down. That's until ATC says, "Columbia Three Seven Victor, have you begun your descent?" Find an instructor that has experience in both aircraft. They're likely to know the differences and are better equipped to train you.

"If I run into problems, I'll just pull the 'chute," is a phrase I've heard more than once.

GPS is to navigation as the transistor is to electronics. The sectionals we learned to read as a private pilot are now replaced by a moving map. In some capacity, the Airport/Facilities Directory we used to buy is now replaced by our GPS database. As a result, pilotage and dead reckoning have become a historical artifact. That's not a big deal until you find yourself looking at the ground wishing you had been paying better attention to your exact location. A rare occurrence because GPS never fails, right? On older G1000 systems, failure of one LCD screen took out *both* your moving maps due to reversionary mode.

GPS places bracketing VOR courses in the history books as well. Now we can fly an airway without ever tuning in a VOR frequency. It won't be long before WAAS erodes our ability to track an ILS.

Speaking of looking out the window, traffic systems are much more capable of spotting aircraft that have operational transponders than the pilot. Who needs to look out the window? Just hope you don't find yourself flying through a gaggle of gliders. Traffic systems have lured us to spend more time scanning the glass inside of the cockpit than the glass that looks outside the cockpit.



Left: *Which strikes are real? You'd best have a clue before counting on this device while cruising along in IMC.*

Satellite-based weather in the cockpit has certainly added a different dimension to the stay-or-go decision. Ten years ago, if you did not have on-board radar, you might have been lucky enough to own a Stormscope or Strikefinder.

Modern portable or panel-mounted systems display just about all the weather data you'll ever need. No need to call Flight Watch to get an update along your route. That's true as long as you are getting frequent datalink updates. Miss a couple of updates and the flight just got a whole lot more complex.

Thunderstorm avoidance is much easier with satellite-based weather. Pilots are perpetually tempted to use the NEXRAD display to tactically weave through a line of thunderstorms, as if they had airborne radar. Once again, if a pilot chooses to use satellite weather as a tactical tool, understanding the limitations of the product is paramount.

Even something as "simple" as a Stormscope can rate four hours of good ground instruction on how to interpret the display. Do you understand the concept of radial spread and the difference between strike and cell mode?

Cold Logic

Technology will definitely save lives, but there's little question it may cost us a few lives too. Even so, the pilot's use or misuse of the technology is typically the blame for such accidents. Understanding the limitations of the technology is just as important as understanding how to use it. Technically advanced aircraft are quickly building in numbers and low-time private pilots are buying them.

These pilots are flying their aircraft further and in more demanding conditions than they might have in a 1981 Skyhawk with two NAV/COMMS and no autopilot. High-time pilots are pushing their envelopes, too, but they at least have a reservoir of real-world experience to temper their technological bravado.

It's not that extra equipment shouldn't influence your go/no-go decision. It's just up to you to control that influence wisely. If you purchase some new equipment or transition to a technically advanced airplane, do yourself a big favor: Find an instructor skilled in this area and let them put you through an exhaustive training regimen. Then make a plan for how the technology at your disposal will change your decision-making before and during a flight.

Scott Dennstaedt is an IFR *Contributing Editor and specialist in technologically advanced aircraft.*

THE QUIZ

The wonders of NextGen air traffic control where every flight is a direct and targets never merge is not here just yet (say with as much sarcasm as you wish), so you still might get the occasional hold or have to mix it up in a tango of VFR and IFR traffic. How prepared are you? This quiz was inspired by a similar one on AVweb. Check out more brainteasers at www.avweb.com. ***Answers are on page 16.***

1. A simple true or false: Air Traffic Control (ATC) can only issue airborne holds to IFR traffic.

2. You're cruising along in that new, turbo-normalized brute you just acquired at 17,000 feet and ATC slaps you into a standard holding pattern. How long should your legs be?

a. One and a half minutes.
b. One minute.
c. 45 seconds.
d. Long enough to reach the rudder pedals.

3. It was a VMC day, so you cancel to get out of the hold and keep going with flight following. You're down to 10,500 feet in Class E airspace and hear ATC issue holding instructions to a tired Twin Beech to hold east of the Boondocks VOR at 11,000 feet. Your route will take you right under that traffic and, sure enough you can see on your traffic display that you'll pass right beneath the Beech. The controller clearly

a. is doing his job by the book since no separation is required and traffic advisories are workload permitting.
b. is cutting it close because 500-fot vertical separation is required.
c. screwed up because 1000-foot vertical separation is required.
d. is fine as long you or the Beech report the other in sight.

4. It's night by the time you enter downwind to Runway 20 at the uncontrolled destination airport. You then hear IFR traffic call, "... final approach fix inbound, localizer Runway 2." Doing the math you sense merger problems. The weather is clear and visibility is 10 miles. Who has the right of way?

a. IFR traffic always has right-of-way over VFR.
b. VFR always has right-of-way in VMC.
c. Unless the IFR traffic has an emergency, or they're shooting the approach in a hot air balloon, you have the right-of-way.
d. The control tower will decide.