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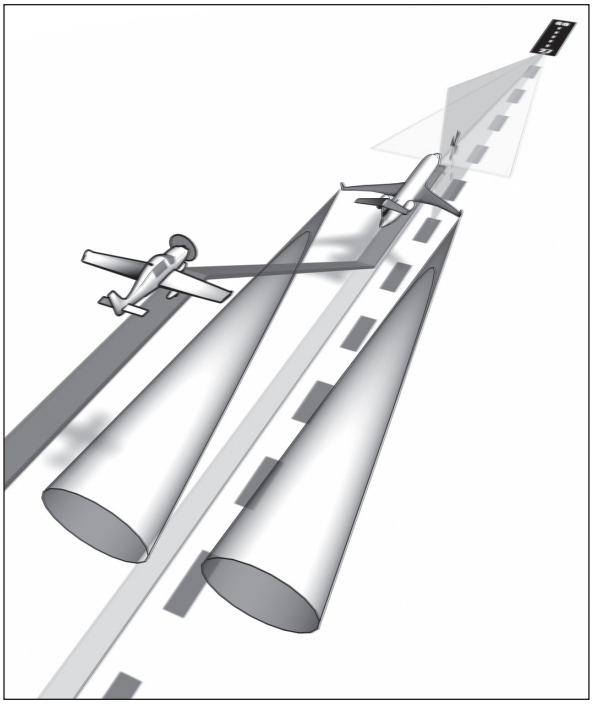

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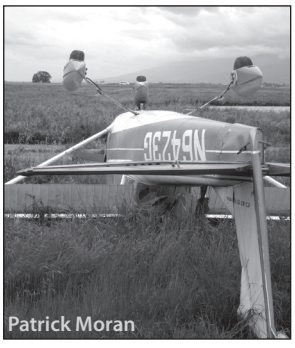

Three fatals ... page 18

ANATOMY OF THREE CRASHES

Being close to a fatal accident can be enough to question how and why we fly. But with each tragedy is an opportunity to learn.

by Fred Simonds

Every incident or accident embodies valuable lessons that can help you fly more safely. I was a full-time flight instructor with a flight school in south Florida that suffered three fatal accidents between Oct. 27, 2007, and March 13, 2008. I would like to share the lessons I learned from those accidents with you.

The Mechanical Failure

In June 2007 an instructor named Anders Selberg joined our staff. With over 12,500 hours, he was easily the highest-time pilot in the school.

On the evening of Oct. 27, 2007, Anders conducted an instrument training flight with an 18-year old student and a 39-year old observer in the back seat. They were flying a 1980 Piper Archer, N8155C. The aircraft departed Lantana, Fla., (KLNA) with full fuel tanks.

After flying approaches in the Fort Lauderdale/Pompano area, the Archer began talking with Palm Beach Approach. Just after 8 pm, the student requested an approach into KLNA, which required them to fly north over Lantana and Palm Beach International Airport (KPBI), then execute a procedure turn and fly the approach southbound into Lantana. The controller approved their request and told the crew to maintain VFR northbound at 2500 feet.

A minute later, Anders requested 2000 feet to remain VFR. The controller again approved the request.

Six minutes later came an urgent call, in the student's voice: "We have an engine problem. We need to land as soon as possible." Thirteen seconds later Anders added, "We are unable to maintain altitude. We don't know how long the engine is gonna hold for us."

The controller informed them that Lantana was "12 o'clock and four miles" ahead. She asked them if they could make the field. In a garbled response the student replied something like, "We don't think we will be able to do that." His was the last transmission from the aircraft, just 41 seconds after their initial emergency call.

ELT signals were reported by a passing aircraft seven minutes after their final call. It took time to find it at night in the congested Boynton Beach area. Even with radar guidance, almost another hour ensued before the Sheriff's helicopter found N8155C.

The Archer had clipped some trees while landing on a dark golf-course fairway. It struck a mound nose-first, flipping the airplane upside down. Anders and his student died soon after the crash, according to the observer, who survived with serious injuries. Impressively, he recovered and is continuing his flight training.

The NTSB's Preliminary Report stated that the gascolator bowl beneath the engine was loose, and notes that there were fuel stains aft of the gascolator on the airplane's belly. The tanks were empty. The pilots had just pumped out what little fuel hadn't leaked out when they turned on the aux pump and switched tanks while vainly trying to restore power. At least there was no fire.

Anders had reportedly told another instructor that, "The conditions [sic] of the planes here are not the greatest. The only thing we can do is check to the extent that we can check and fly the planes."

Tragically, his words proved prophetic. The gascolator housing is not visible from the outside of an Archer. Perhaps fuel stains from a small leak could have been seen, but, most likely, the leak developed later in the accident flight or the emergency would have occurred sooner.

There is little doubt that Anders did his best. Despite probably being tired and perhaps hungry, his op-

Photo by Patrick Moran

Right: *The hunter named Fate stalks the experienced and the novice alike. The hope is that studying the poor calls and misfortunes of others will give us an edge when our moment comes.*

THE QUIZ

Pilots and aviation authorities love to use acronyms, codes and shorthand. Probably it's just so no one is sure what they're talking about. Maybe it's to save weight. When it comes to weather, however, you need to know what the code means to understand the big picture. Here are a few questions to see how much of an insider you are. ***Answers are on page 23.***

1. After almost an hour of slogging through wet, lumpy clouds, ATC tells you that there are level two through four weather echoes along your route. Diverting isn't at the top of your list, but neither is transiting a thunderstorm. How nasty is level two through four?

a. Weak through strong
b. Moderate through very strong
c. Moderate through intense
d. Strong through extreme

2. You decide to pony up and get an XM-Weather GPS off eBay so you can see storms for yourself. What colors would level two through level four weather likely show up as on the GPS moving map?

a. Light green through dark green
b. Dark green through yellow
c. Dark green through red
d. Yellow through red

3. The side benefit of XM Radio in the airplane is you can sing along to "80s on 8" without the lady in the Land Rover giving you funny looks. You're interrupted anyway when you notice a ring of green Nexrad around your destination airport. You query ATC and they say it's probably AP. What's AP and what should you do about it?

a. Atmospheric perturbation, expect wind sheer
b. Amorphic precipitation, expect low visibility
c. Anomalous propagation, just ignore it
d. Automatic perspiration, start sweating like we all do when something weird shows up on the weather display

4. Datalink METAR symbols often show VFR, MVFR, IFR, and LIFR. What are the lower limits of MVFR and LIFR?

a. Five miles and 3000 feet / three miles and 1000 feet
b. Five miles and 3000 feet / one mile and 500 feet
c. Three miles and 1000 feet / one mile and 500 feet
d. Three miles and 1000 feet / zero-zero

tions were few. He was low at night over congested terrain. Assuming a 700-FPM descent rate from 2000 feet AGL, he had less than three minutes of air time. He landed under control, only to be thwarted by a golf mound in the wrong place.

The Midair

Less than two months later, on Dec. 8, a solo student named Cleon Alvares was flying from Lantana to Fort Lauderdale Executive Airport (KFXE) to practice takeoffs and landings at an airport with an operating control tower. Many of you know this is a requirement in order to qualify for a private pilot certificate. He had been there before, had been briefed by his instructor and was properly endorsed for the flight.

He never made it. En route he collided with a Piper Twin Comanche making an IFR approach in visual conditions into neighboring Pompano airport (KPMP).

Miami Approach called Cleon's Cessna 152 as traffic to the Piper twice. The Piper took no evasive action or acknowledged that he had Cleon's aircraft in sight. Cleon himself was not talking with ATC, nor was he required to.

It is easy to write this accident off as "wrong place, wrong time." There is indeed that aspect. But Cleon would have been wise to call Miami Approach and ask for flight following, especially since he was flying in high-density airspace.

Many flight students are reluctant, if not downright afraid, to talk with ATC, especially if English is not their native language. Controllers advise that you speak *slowly*. Do that, and it will work out better than you think.

How could a highly-rated, experienced pilot allow himself to be cornered this way?

The Stall/Spin

I was briefing my instrument student before our flight on the morning of Thursday, March 13, 2008, when the phone rang. Our desk person Ashley answered the call and immediately broke into tears.

It was the Martin County Sheriff's office. They had received a call about a downed airplane in Indiantown and believed it to be our Cessna 172S Skyhawk, N284SP. Details as to survivors were sketchy, but someone said a couple of occupants had crawled out of the airplane.

My blood froze. The pilot, an ATP, CFII/MEI and type-rated Learjet 60 captain, was co-owner of the school. Jeff was just 36 years old, a married father of two small children.

We drove to the accident scene. Our hopes were dashed when the police told us that our worst fears were confirmed. All four occupants had perished.

Jeff had been on a bird-watching mission with three researchers from Florida Atlantic University. The mission incorporated an edgy, demanding profile calling for maneuvering at low speeds near the ground. AOPA's Air Safety Foundation tells us that maneuvering flight is the number-one killer of GA pilots.

An eyewitness saw the airplane maneuvering at about 200-250 feet AGL when "the nose dropped and the tail went straight up." The airplane

(continued on page 23)

is that the turn to haul back around to the 047 radial outbound for the approach exceeds the limits the approach designers allow. We'd hope few pilots would ever have to worry about this restriction, as it would mean they went about 40 miles out of their way.

Instrument flying is all in the details, whether it's just one or two little things or an entire approach rewrite. In this game, it always pays to be an "alert reader."

NAVIGATING PAST T-STORMS

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tion of a microburst, especially a dry microburst, which is essentially invisible. Hail, gust fronts, outflow boundaries and convective wind shear all can exist in the clear air around the bases of these cells.

What appears to look harmless now can turn real ugly in just a few minutes. Rain shafts with cold, dense downdrafts can appear out of the bases of any of these developing cells. Flying down low in the poor visibility hides the structure of the cells from your view. This prevents you from seeing which cells might have more of a chance to release such a torrent of wind, not to mention the thermal turbulence alone that makes it difficult to read charts or change frequencies.

Your satellite-weather NEXRAD and lightning product won't help with this problem either, given the five- to eight-minute latency. One minute you think you are flying below or in the base of a harmless cumulus cloud only to find out that 10 minutes later, what looked like a harmless cloud now has a billowing tower starting to build its anvil shape.

Turns for the Better

High or low, deviating around convection is almost always the best choice. But it requires good coordination with ATC and looking ahead 50 or 100 miles to avoid the constant vectoring or route changes.

A 10- or 20-degree deviation left or right is the norm with navigable cells. If you find yourself continually asking for more than 30 degrees left or right, you're probably too close to the cells or the area of thunderstorms is just too large. In these situations, I'll get as close to the line of thunderstorms as I can, land and wait for them to pass before departing. This gives me a chance to empty the bladder, refuel and check the weather for the remainder of my route.

When possible, fly on the upwind side of the cell. You want to avoid flying in front of the cell, as this is where most of the hazards with thunderstorms are found. If you have satellite-based weather, identify where the cell has just left and fly toward that point. By the time you get there, the cell or line you were concerned about will have moved off by five or more miles.

Whenever I fly along the northern Gulf Coast states during the day, I try to fly 15 miles or so offshore. I know this carries some risk, but most pulse thunderstorms are located inland rather than over the water. You'll have fewer cells to dance around, lessening your workload. This trend reverses at night.

Your Best Shot

Just like you were taught to look down the runway when landing, the same applies with a convective environment. The cell that's dead ahead is the immediate concern, but making it all the way to your destination most of the time means planning beyond the immediate next move.

Never lose sight of the big picture and all of the homework you did before your flight, and keep a close eye on changes that pop up en route. It's the attention to details that makes the survivors.

See Scott's online pilot weather training at www.avwxworkshops.com

ANATOMY OF THREE CRASHES

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spun to the right and descended into the ground. Worse, the airplane was by my calculation about 264 pounds over gross weight.

How could a highly-rated, experienced pilot allow himself to be cornered this way?

Simple. He accommodated not one, but two, demanding requests. Whether he did this out of accommodating nature, thinking he could pull it of, or under duress, we'll never know. But clearly, the outcome was fatal for all.

Putting Pieces Together

Learning how to analyze accidents is a valuable and perhaps life-saving skill. For those of us close to an accident, it's also a way of coping with the loss. Some of the take-aways apply to all the accidents. Some apply to only one. All have become part of my flying life since those days.

When we chair-fly and imagine handling an in-flight emergency, we tend to play out our actions slowly. We always have enough time to successfully handle the outcome. Real emergencies can happen quickly. Anders had three minutes to land. Jeff had seconds to catch the impend-

QUIZ ANSWERS *(questions on page 18)*

1. **b.** The controller can see weather on his scope, but how much resolution he has depends on the equipment and what he chooses to display at that time. The official ratings for weather returns are: 1-weak, 2-moderate, 3-strong, 4-very strong, 5-intense, 6-extreme.

2. **b.** or **c.** Third-party weather providers use their own algorithms to evaluate and display the raw data they get from the national radar network, which may affect how intensely the return is depicted, so what you see may not quite match what the controller sees. Datalink is also affected by a delay that primary radar isn't. We like to stay out of anything painted yellow or higher whenever practical.

3. **c.** This kind of return is often seen on clear, still nights, but is far more likely to show up on a single-site radar (like you might see online) than on full-country Nexrad you'd have in the cockpit. AP does sometimes evade the automated image clean-up for Nexrad and appear on your display. Then again, it might be a big flock of birds. If it moves, watch out.

4. **d.** Marginal VFR (MVFR) is less than 3000 feet and five miles but more than 1000 feet and three miles. Low IFR (LIFR) is anything under 500 feet and one mile, so it could mean zero-zero. Note that a ceiling of 400 feet but excellent visibility, or 1/2-mile visibility in mist with the sun visible, are both LIFR. This is one reason it's important to check the details of a datalink METAR.

ing stall and recover. Cleon may have had no time at all.

We also need to remember that even when we're flying over civilized areas, following the rules and competent or even expert in the plane we're flying, we may not be found in time to save our lives. Anders' example makes a good case for a 406 MHz ELT. The Sheriff's helicopter asked Approach for a lat/long, but the best PBI could give them was an imprecise 10 miles south on the PBI 180-degree radial.

Many, if not most, of us need to learn to speak up even when it's difficult. Anders never brought up concerns about maintenance and was flying a long, fatiguing schedule. Cleon was likely uncomfortable talking on the radio to ATC. Jeff didn't want to turn away the researchers. But there 's often great safetyin the word "No."

For both Anders and Jeff, altitude equaled options—or lack thereof. A little higher and the Archer might have made it to Lantana. Had Jeff and his passengers been able to do their work a bit higher, Jeff might have had time to recover. For both Cleon and Anders, ATC resources would have added a margin of safety. A controller could have called out traffic to Cleon or granted Anders an IFR pop-up, which would have meant more altitude.

There were two things I learned from the Archer crash alone. We must scan engine and fuel instruments periodically. Had the crew noted abnormally low fuel sooner, they might have managed a precautionary landing. And when an emergency hits, never give up. Anders fought for their lives with every ounce of skill he possessed.

The final take away was something I've always known, but now understand much deeper: No flight is mandatory. Flying is not a right. It's a privilege we exercise with caution and respect. We don't want others reading about our accident.

Fred Simonds is an active, 3000-hour instructor. See his web page at www.fredonflying.com.