FLYING LESSONS for November 5, 2020

FLYING LESSONS uses recent mishap reports to consider what *might* have contributed to accidents, so you can make better decisions if you face similar circumstances. In almost all cases design characteristics of a specific airplane have little direct bearing on the possible causes of aircraft accidents—but knowing how your airplane's systems respond can make the difference in your success as a scenario unfolds. Apply these *FLYING LESSONS* to the specific airplane you fly. Verify all technical information before applying it to your aircraft or operation, with manufacturers' data and recommendations taking precedence. **You are pilot in command and are ultimately responsible for the decisions you make.**

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This week's LESSONS:

Command and Control

Reader Henry Sickle sent me this video of a Cessna 310 just before crashing at Las Vegas, Nevada—a video that has received widespread viewing online and through news outlets. Henry provides his comments:

> Here is an interesting flight for your review. We had been reviewing it here at our FBO as he was one of our airport pilots. He had been flying this airplane for decades. There is more info on various aviation accident websites also. The video makes this unique.
>
> ***Personal opinion***...I saw this video and was able to freeze frame. It looks like the left engine is fully feathered with lots of oil [and] soot under the left-hand nacelle. The right engine was producing power but did not sound like 2700 RPM. What looks like the slow-turning propeller is actually the camera (strobe) shutter speed appearing to make it slower than it is. My guess is the engine was at 2500 rpm +/-. Turn up the sound to hear the operating engine.
>
> It would seem that the IO-520 powered airplane could fly in the configuration that I saw in the video. But he probably dropped below the single engine best rate of climb speed (106 knots) [and] best angle of climb single engine (92 knots). V_{MCA} (81 knots)…and no altitude to recover. He was going to land; it was just a matter of time.
>
> It looked like he did a good job of flying all the way to the landing. Just did not make a "choice"" to land off the airport in better conditions of his choice.

See https://www.youtube.com/watch?v=8OPiDaAHbv4

The Flight Safety Foundation's Aviation Safety Network (ASN) website published a transcript of Air Traffic Control transmissions, with time codes:

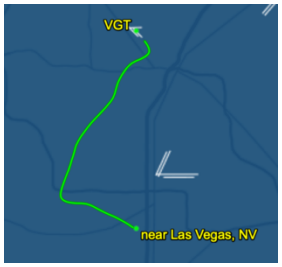
> 09:27:42 (North Las Vegas Tower): N01G, (windshear below 6), runway 12R, cleared for takeoff, *** (approach).
>
> 09:30:05 (Las Vegas Departure 125.9): N01G, Las Vegas Approach, ident, McCarran altimeter 30.21.
>
> 09:30:09 (N101G): 30.21.
>
> 09:30:12 (Las Vegas Departure 125.9): 01G, you're radar contact one mile south of North Las Vegas, you're slightly broken. Did you say something about Henderson?
>
> 09:30:18 (N101G): Affirmative, like to change our destination to Henderson now.

Two and a half minutes after being cleared for takeoff on a trip to the pilot's home base at Montgomery Field, San Diego, California, and immediately upon being identified on radar, the

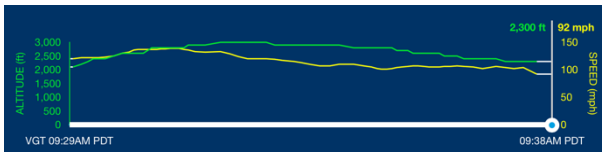
pilot requested a diversion to nearby Henderson, Nevada, on the south side of Las Vegas. Clearly something was wrong. The transcript continues:

> 09:30:22 (Las Vegas Departure 125.9): N01G, roger, uh...Henderson is (lining) runway 17L and R, the wind there is calm, Henderson altimeter 30.23.
>
> 09:30:34 (N101G): 101G.
>
> 09:31:04 (Las Vegas Departure 125.9): N01G, I need you to remain outside of Bravo airspace, you can't turn that way, that's right in McCarran's traffic area.

The Flightaware flight track shows that the pilot indeed steered well clear of the Las Vegas Class B airspace, west of McCarran International Airport (indicated by the white runway symbols). Remember, as the pilot flew past McCarran, he had already shut down an engine as he climbed out of North Las Vegas.



Meanwhile he appeared to maintain control, flying an approximately steady groundspeed that, with surface winds from the south, is consistent with flight at or near V_{YSE} ("blue line") speed…what you're supposed to do on one engine close to the ground. Altitude was apparently controlled as well, more or less level before a gradual descent.



> 09:31:10 (N101G): Okay, 101G.
>
> 09:34:53 (Las Vegas Departure 125.9): 01G, uh, yeah, you proceed direct Henderson at your discretion, and uh, contact tower now on 125.1.
>
> 09:34:59 (N101G): 125.1 for 101G.
>
> 09:35:24 (N101G): Henderson Tower, Twin Cessna 101G, eight to the northwest, landing and we're, we have to shut down one engine so, like to come straight in.

The ASN website notes that "the pilot was forced to shut down an engine about five minutes before the crash." It does not state why he had to. Some witnesses report the left engine was on fire; reader Sickle's analysis above states it appears there was oil and soot under the left nacelle, the one with the feathered propeller.

> 09:35:46 (Henderson Tower); Twin Cessna 101G, Henderson Tower, runway 17R, cleared to land.
>
> 09:36:15 (Henderson Tower): N101G, do you need me to roll the equipment?
>
> 09:36:18 (N101G): Uh, negative.
>
> 09:36:20 (Henderson Tower): (Right then).
>
> 09:38:38 (Henderson Tower): N101G, just lost your target, sir. Verify everything's okay?

Of course, we don't yet have any investigative reports available for this double-fatality crash. And we can't discount the narrowing focus that is natural in a high-stress, potentially life-threatening event—what military pilots sometimes call a "helmet fire," because the pilot is so caught up in the emergency he/she loses almost all ability to evaluate status and make informed choices. Only training, experience and discipline permits a pilot to overcome this loss of awareness.

See:
https://flightaware.com/live/flight/N101G/history/20201029/1629Z/KVGT/L%2036.02600%20-115.19409
https://aviation-safety.net/wikibase/244479

Command and control

My friends in the Cirrus Owners and Pilots Association (COPA) have a great saying: ***"loss of control of an aircraft is always preceded by loss of command of the aircraft."*** I don't believe

the Twin Cessna pilot lost control. But might the tragic outcome have been better with different choices about aircraft command?

Might the pilot have declared an emergency and used that to substantiate his telling ATC he was landing at McCarran? If he still wanted to go to Henderson, could he have used emergency authority to cut through the Class B and take a direct route? As he found he could not make the Henderson runway, could he have landed off-airport in some of the open area nearby, and avoided running into the building?

I commend the pilot for handling the initial emergency, feathering the failed engine's propeller and immediately choosing a departure alternate airport. From the video it appears the pilot maintained ***control*** to the point of impact. I've not found any evidence the airplane did anything besides fly straight in to impact…it does not appear to have rolled over and dove in, like so many other engine-out crashes.

Were there opportunities to ***command*** the situation differently that might have led to a survivable outcome? Is this a *LESSON* that can help us if we're ever in a similar situation?

See www.cirruspilots.org

Questions? Comments? Experiences of your own to relate? Send them to mastery.flight.training@cox.net.

Debrief: Readers write about recent *FLYING LESSONS:*

Reader and flight instructor John Rosenberg writes about last week's *LESSONS*, **Where We Lose It**:

I just read [last week's] *FLYING LESSONS.* Excellent commentary on fatalities resulting from stalls. I'd like to add a couple of points to further support the stats on departure stalls:

> From my experience there is an under-appreciation by many pilots for good pre-takeoff planning taking into account aircraft performance, weight and balance, and environmental conditions. Case in point…A congregation in Sacramento, California held a fundraiser involving a silent auction. A relatively inexperienced private pilot, who was a congregant, volunteered to donate a sightseeing flight as one of the auction items. The successful bidder was a wife who bought the flight for her husband for a Father's Day gift. On Father's Day, the dad and several children (not small) went for the flight. The pilot was not vetted by the fundraising committee. It was taken on blind faith that **since he was a licensed pilot he must be larger than life**…often the case by the unwitting non-aviation savvy public. You know where this is going. Since it was Father's Day in the Sacramento valley, it was summer and HOT. The pilot loaded three people in an older Cessna 172, took off, was in a nose high attitude trying to climb, started a turn, promptly stalled, snapped, and BANG. Four fatalities.
>
> Unfortunately, **there is a big disconnect between where stalls actually occur vs. how we teach them.** Unless we are performing aerial applications or aerobatics in specialty aircraft designed for such purposes, the typical GA airplane and pilot make a takeoff, fly from A to B or benignly cruise around at altitude, and then land. As you know, the FAA in its wisdom has made a philosophical change toward scenario-based training instead of just teaching a mechanical maneuver so as to make use of critical thinking in managing the aircraft. For safety, we don't teach approaches to stalls and stall recovery close to the ground. Typically, we leave the pattern, climb to a safe altitude, and fly to the local "practice area." Unless we use a sophisticated simulator, we have to do it this way. One detriment to this is **the visual perspective at altitude is quite different than it is being within a thousand feet of the ground**. At a high altitude it is more innocent appearing or tame than maneuvering close to the ground. The pattern is really the culmination of all the elements of a ground reference maneuver.

> Go-arounds/missed approaches…**Probably the least practiced and pre-planned phase of flight and often taken for granted, is the go-around**. Usually unplanned, and a last-minute surprise. I can't tell you how many times I have witnessed pilots turning a fairly benign maneuver into a balled-up mess. **How many pilots do you suppose while out on the final approach mentally chair fly or rehearse the actual steps in performing a surprise go-around** either by the pilot's choosing or a tower directed go-around?
>
> Same with an IMC missed approach. ***An instrument approach is never designed to culminate in a landing. It's designed to take us down to a minimum altitude above the ground at which point a decision must be made.*** Since the typical pilot is mission oriented and strives for success **most pilots are pre-disposed to expect to land**. **Many are caught unprepared** to reconfigure the airplane and transition from a stable glide down final approach to a rapid application of power and attitude change along with as you mentioned, the need for considerable re-trimming. IFR pilots are good at reviewing the "where to go and how high" on a missed approach, but how many rehearse the actual reconfiguration and managing of the aircraft itself to safely fly away from the ground without approaching a stall?
>
> In short, **pilots should always keep foremost in their minds to stay away from the critical angle of attack and keep the wing unloaded, stay coordinated, and recognize that the airspeed at which a stall may occur increases with g-loading.**

Good expansion on the topic, John. Delayed decision-making, lack of muscle memory brought on by regular practice, and as you said the disconnect between stall training and actual stall scenarios that is the natural and only sane way to approach in-airplane stall training. Thank you.

Frequent Debriefer Robert Thorson adds:

> This is an excellent dissection of where stalls occur. It immediately brings to mind a video that Doug Stewart (DPE, SAFE Originator and CFI extraordinaire for those who may not know him) put out several years ago. He was climbing just after takeoff to avoid a ridgeline. Without any noticeable pitch change the aircraft departed without much warning. I then realized that maybe **we teach departure stalls in a too hurried fashion**. This is why most airman really don't like departure stalls or fear stalls altogether. If we hold an attitude just above the horizon with climb power and don't rush the maneuver we won't get the high pitch and still get the desired outcome of what really happens on a departure. This needs to be put out to everyone.

Feel free to distribute last week's report if you feel it helps. SAFE reprinted it in a blog last week, and I've included the main points in several webcasts. I noted the same pattern of stalls in Beech Bonanzas several years ago, and lectured on what I call "the truth about stalls" at FAA and other events about a dozen years ago. I'm gratified the AOPA report confirms what I thought was the case…it gives us a clear path toward training that can noticeably reduce the incidence of general aviation fatal accidents. Thank you, Robert.

Questions? Comments? Send them to mastery.flight.training@cox.net.

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