Landings gone wild!

By John Morris

There have been a couple of recent, highly publicized “non-standard” landing accidents in the United States, as well as other countries, involving commercial airliners. In the two US events, both appear to have been caused by stalled aircraft just prior to landing, resulting in extensive damage and injury/death to passengers and crew. How does a professional crew manage to do something like stall a transport, at anytime? After all, when it comes to airplanes, basic flight characteristics are the same – airspeed, angle-of-attack, center of gravity, density altitude and again – airspeed! That bears repeating. Complacency with automation seems to be a recurring theme but luckily it is extremely rare in the commercial world. But when it happens…

Landing in the touchdown zone is mandatory for large transport aircraft, since performance calculations are based on the runway remaining, i.e. post “zone”. An ILS usually makes getting to the touchdown zone possible with visual approach slope indicator (VASI) assistance. Decades ago, the FAA realized that with wide-body transports the flight deck height would cause visual judgment (alone) of aircraft touchdown to be in doubt. But they also realized that stuff happens, i.e. the ILS may be out of service (pre-RNAV days). So it was required that during check rides at least, the drivers make at least one visual approach to landing without any electronic aids. But all the navigation aids are intended to do is get the aircraft to the ”zone”. Unless auto-throttle/auto-land equipped, the driver still has to appropriately slow the plane for actual landing. Amazingly, one of the recent post-accident ideas forwarded by FAA officials is to mandate use of RNAV approaches in lieu of an ILS, since apparently with the ILS out-of-service the pilot could not maintain airspeed to the runway visually. Folks are missing the point – again! This is basic airmanship.

Making it to the touchdown zone using electronic or visual aids still does not explain stalling the airplane. Following the “V” bars or visually, the approach speed can be faster or slower than reference [speed], with faster causing an extended touchdown/rollout and slower leading the plane towards imminent stall – but a short landing rollout, right? Commercial transports are not supposed to approach a landing slower than reference speed due to the various factors affecting aircraft performance. Flying the PC12, and other similar aircraft, is a somewhat different story.

The PC12 should normally to be “driven” the same way as our big brothers on approach. Ideally, we would approach a landing on the AoA

reference point/dynamic speed bug. But when it is time to actually slow to land is when it can get wild.

The PC12 is built for and quite capable of landing at non-commercial, unmarked, unpaved, short runways that require unaided visual skills. This capability requires a proper understanding of characteristics unique to the PC12. Most of the commercial transports have a system called a “Stick Shaker”. Heard of it? I have referred to it (and its cousin “Stick Pusher”) more than once in past articles as it relates to the PC12. However, most transports do not have the Stick Pusher since they are usually multi-engine. But the Stick Pusher is what can make our landings wild in the PC12.

So, here we go again. Whether making a short field landing or a normal, touchdown zone landing, airspeed, angle-of-attack, center of gravity, density altitude and again that darn airspeed, will determine whether or not we fall victim to a Stick Pusher (not Stick Shaker) activation just prior to landing. And NOT PRESSING (holding) THE PUSHER INTERRUPT BUTTON, avoids this! If you are regularly pressing the button while on final approach, it is because you have had a wild landing or two. Plus, since it can’t possibly be because you have been TOO SLOW you will keep to your “normal” way of landing, plus defeat that annoying system!

The “gotcha” moment is at approximately 5 feet above touchdown. This is where being accustomed to the normal, trailing-link style smooth landings can and do screw up short-type landings. Depending on all of the aforementioned basic aerodynamics, drivers will over compensate angle-of-attack (fluff the landing) while simultaneously reducing the final amount of power (speed reduction) and… “Where did that come from”? “Shouldn’t there have been a Stick Shaker first”? There must be something wrong with the system (Stick Pusher)”?

If we were making a standard approach to touchdown then we might encounter a possible Stick Shaker, (while flying slower than recommended), well before the “Push”. This of course would allow us to reduce our angle-of-attack and just maybe add a small amount of power to recover.

To make the short approach landing we need to stick to an appropriate visual approach speed and angle, hold the “touchdown zone/landing sight box” in a static position [box moving up (too slow) box moving down (too fast)] – the visual version of AoA/Speed Bug. And resist, at just before touchdown, the urge to chop the power while increasing (pitch) what appears to be not much, but IS too much, the angle-of-attack! Not difficult, but at the same time requires practice. This technique is basically standard landing procedure but if we regularly do not use full flaps then we will probably start to develop habits that may cause the wild landing. Especially

if we are encountering a short landing strip for the first time, haven't done it in a while, or are just wanting to land short, when we least expect it! Another "wild" possibility is an apparently proper approach angle, in the "landing sight box", but in the reverse command region. Remember this area of primary training discussion? I have demonstrated this flight region and it should not be taken lightly with the PC12!

One last comment – we should never be *so* comfortable with a landing that we only lightly hold the control yoke. Just in case the unexpected "Pusher" does happen right before touchdown, the system is designed for control yoke force overcoming the Pusher, without pressing the Pusher Interrupt Button. A one-time only, learn your lesson; firm three-point landing is better than a hard nose gear first landing!

"A safe pilot is always learning"

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