**Calm wind landings©**

I have read that world-wide the average wind has a velocity of about twelve knots. At each end of this reference are wind extremes that can and do cause pilots pattern and landing difficulties. One extreme the strong winds are expected while the other extreme, the so called calm wind, has unexpected capabilities. A student should be exposed early to runways of varied widths and lengths in both left and right patterns Each of these extremes offer specific problems that can be solved only by a varied exposure. Once exposed a pilot will better avoid problems by using the skills of anticipation he has acquired.

Last week, as I walked up to the plane, I momentarily stopped and felt the wind. It was very light but could be perceived as a tail-wind for the noise abatement runway currently in use. I had my student, sitting in the plane, get out and asked him to feel the wind. What followed was an analysis of what happens when a wind is classified as “calm”. Even more importantly, we covered all the effects for the even greater probability that the wind would be “light and variable”. We did some watching of aircraft making their landings. Landings were consistently long on the 5000’ runway. Also, the landings were usually off to the side of the center line.

On average, landings are made into runways with the twelve knot relatively constant velocity and direction winds. Most of our practice and landings are into such winds plus or minus a knot or two. This experience has taught us to make the adjustments to the pattern and aircraft configuration required to produce a satisfactory landing. “Calm winds” do not provide the clues the inexperienced pilot has come to expect.

The light tail wind will increase the ground speed and shallow the approach angle. The usual changes in flaps, power, and airspeed fail to produce the desired results. This is caused by the fact that, while the tail wind may exist from 600 feet down to 100 feet the winds higher and lower will be from different directions and velocities. Even the tail wind will vary in velocity on final. The momentary truly calm wind compounds the difficulties.

The solution I offered my student was to extend the down wind leg of the pattern by twenty to thirty seconds any time the ATIS, wind sock, or AWOS indicates a calm wind condition. This adjustment allowed for the more shallow approach angle caused by the increased ground speed. The student was on a good approach but a new “calm wind” problem arose. In the flare the aircraft would begin a barely perceptible drift off the center line.

It seems that the intensity of the landing itself often so focuses the attention of the student that he/she is completely unaware of drift unless it is either pronounced or occurring just before touchdown. The likelihood or probability of this condition occurring must be pre-registered into the mind of the pilot any time the “calm” condition exists. With the runway out of sight in a proper flare the pilot must get his clues from the peripheral vision and the horizon. This takes both practice and experience especially in calm conditions. A failure to correct even the slightest side load on the landing gear is potentially very harmful to the aircraft since this is the weakest area of landing gear geometry. The instructor who does not foresee this area of landing difficulty is not properly anticipating an area of difficulty.

A few day prior to this flight another student and I had winds at 23 knots with higher gusts 40 degrees off the runway heading. Once again I proceeded to talk and walk through the headings for both left and right traffic that would produce an appropriate pattern. Just to get into the plane and start doing landings in these conditions would have been most inappropriate. We were transitioning the student from a C-150 to a C-172. This was his third C-172 flight but his first since getting his license.

In the pattern walk through, I gave the student the needed opportunity to see that some operational adjustments would be required. The initial takeoff would cause us to gain altitude over less distance so that our crosswind would need to be flown angled well into the wind and extended somewhat to create a wider downwind. The turn downwind would need to be angled away from the runway since it was necessary to fly a somewhat wider downwind leg both because of being in right traffic and because the wind direction would produce a an effectively shorter base leg due to a higher ground speed. The power reduction would begin before the numbers and even more angle into the wind would be taken to counter the increased wind effect at a slower airspeed. The wider downwind would give us a base leg sufficiently long to allow adjustments in the length and height of our final approach. The instructional emphasis here is that the pilot's control over the final approach must begin on the downwind leg if not sooner.

Under these or similar conditions the landing must be considered an option not a necessity. The go-around is the first choice option if the stabilized final approach cannot be established.

Flying the same runway in left hand traffic in the same wind conditions requires the pilot to make a shorter crosswind to help counter the wind's efforts to drift the aircraft away from the runway. The downwind leg must be angled toward the runway. The base leg again must be sufficient to allow adjustments to the height and length of the final approach course.

The instructional process for landings is not complete unless it exposes the student to the wind conditions described above. The opportunity to fly both left and right patterns in the same crosswind conditions is essential. Variety of pattern and conditions can be created by going to controlled airports with multiple runways. ATC will honor requests for crosswind runways and different patterns when traffic conditions allow. Changing the time of day is a good way to obtain varied wind velocity.