Trouble Shooting Landings
Lessons in Pro-active v/s Reactive Flying

By Dave Scott. Instructor, 1st U.S. R/C Flight School
Illustrations by Dave Scott

Dave Scott is a winning full-scale aero-batic competitor, professional R/C airshow pilot, founder of 1st U.S. R/C Flight School, and author of several radio control flight training manuals. His books and articles feature the accelerated training techniques that he developed instructing over 1200 R/C pilots during his school's 4 & 5-day courses. More information about his books and flight school can be found at www.rcflightschool.com

Introduction

A lot of pilots think that stick time and getting better at making corrections are the main requirements for better landings, so little thought is given to how they land or whether they are flying correctly. As a consequence of flying without a plan, i.e., reacting to the airplane, most pilots end up making 4 to 5 times more control inputs than what is required when the landing is set up correctly.   This type of flying demands more effort and is why pilots get behind their airplanes during the runway lineup and landing flare. Reactive flying is also why certain flyers struggle to land on windier days or when flying a new model. On the other hand, a characteristic of good pilots is that they always seem to make landing look easy. That's because while most flyers are continually making corrections, better flyers set up their landings so that fewer adjustments are needed altogether, thus allowing them plenty of time to get ready for an easier-smoother touchdown. In short, most landing difficulties are not due to a lack of stick time or inadequate reflexes, but are primarily the result of reacting to the airplane rather than pro-actively controlling the airplane when setting up the landing.

Anticipate the Final Turn

As a rule, the ease of your landings reflects the quality of the final base leg turn that sets them up. This is to say that while a person might have the ability to salvage a landing after a poor turn, the experience will be far more stressful.   On the other hand, the comfort that coincides a nice final turn tends to stay with the pilot all the way to the ground.

In order to come out of the final turn over the runway's extended centerline (without needing to make a lot of adjustments) the pilot must account for the effect of the wind on the turn (figure 1).   That is, you'll need to anticipate whether the wind will cause the turn to become wider or tighter and target where to start the turn from with this in mind. In short, to come out of
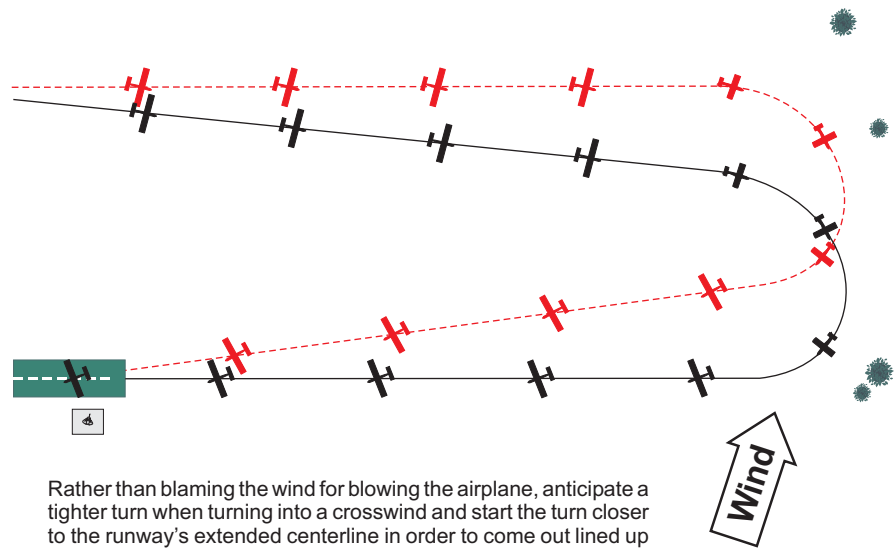
the final turn lined up with the runway, good pilots look to adjust where they start the turn from, rather than adjusting the turn itself (figure 2).
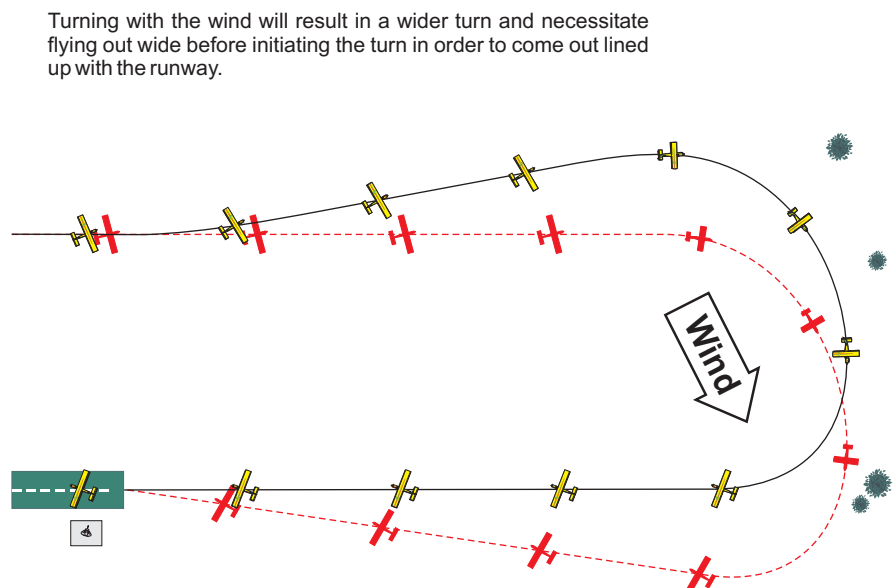
Maintain a Level Final Turn

Try to keep the final base leg turn reasonably level. Maintaining an even-speed turn, not climbing or diving, minimizes anxiety during the turn and prevents excess speed from building up.   A reasonably level turn also eliminates the low altitude oscillations, i.e., sharp altitude changes, that can so easily take your attention away from maintaining a good lineup. If keeping

Rather than blaming the wind for blowing the airplane, anticipate a tighter turn when turning into a crosswind and start the turn closer to the runway's extended centerline in order to come out lined up with the runway.

Turning with the wind will result in a wider turn and necessitate flying out wide before initiating the turn in order to come out lined up with the runway.

When turning "with" the crosswind, widen out your pattern to account for the wider turn.

When turning "into" a crosswind, start the turn closer to the centerline anticipating a smaller diameter turn.

Correctly anticipating where to start the final turn from will reduce the number of adjustments needed to line up with the runway and thus afford you more time to think about throttle management and controlling the touchdown location.

Wind

Wind

Wide   **Norm**   **Closer**

C̶L̶
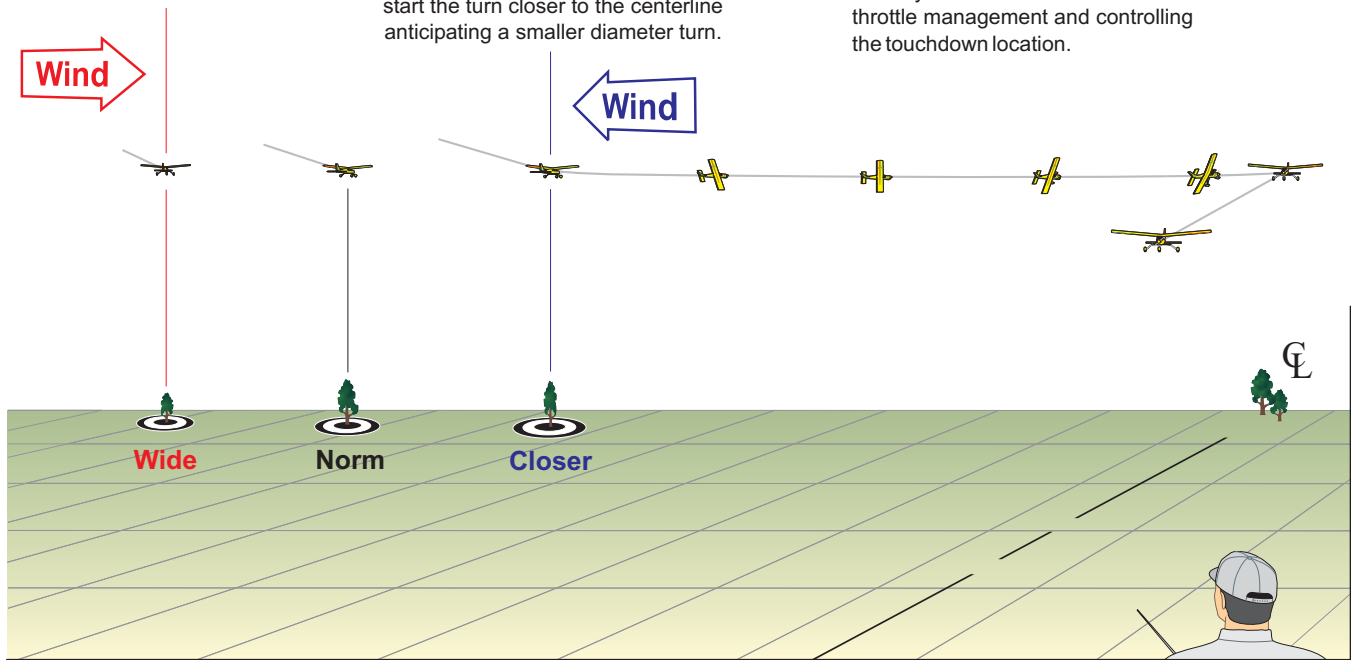
your final turn reasonably level results in high landing approaches, simply start pulling the throttle back a little earlier and/or enter the final turn lower to start with (figure 3).

Consistent Lineups

In most flying environments, the runway is directly in front of where the pilots stand. Therefore, the most effective method to consistently overfly the runway centerline is to use yourself as the primary reference throughout the approach, and try to guide the airplane to a point slightly in front of you (figure 4). Flying the airplane to a point slightly in front of you will result in your achieving the runway every time, regardless of the model's size, orientation (crosswind crabs) and helps limit the number of bad landings that result from relying on hit-or-miss depth perception.

Object as a Whole

Another common landing mistake is pointing the fuselage toward the runway during the approach in a crosswind. Note that while an airplane will crab into a crosswind, it will continue to fly in a straight line as long as the wings are level (figure 5). Therefore, rather than pointing the

Maintaining a reasonably level final turn prevents both anxiety and excess speed from building up. If your landing approaches are high, rather than performing diving turns, simply enter the final turn lower to start with.
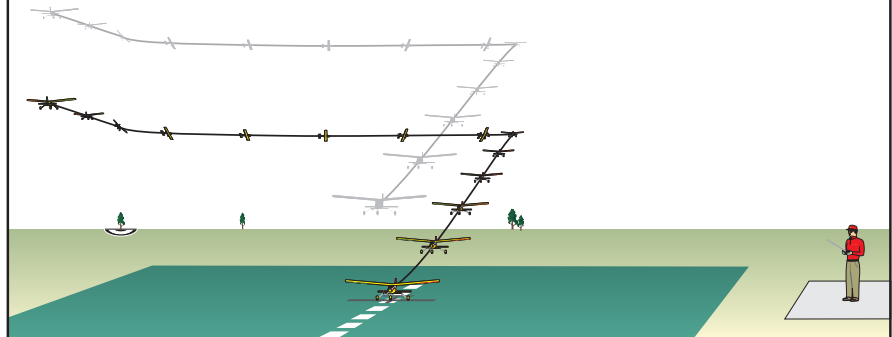
Instead of trying to guestimate the plane's position over the ground, proficient flyers observe whether the runway centerline is close, moderately close, or further away from where they are standing - and then fly a corresponding approach that brings the airplane close, moderately close, or further away from themselves.
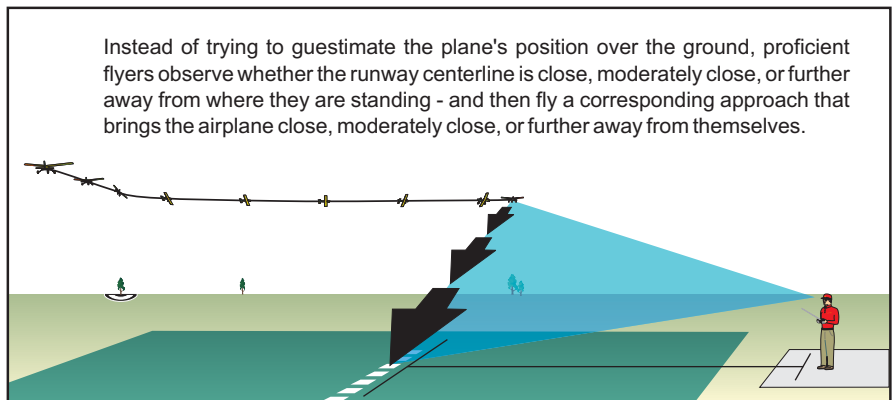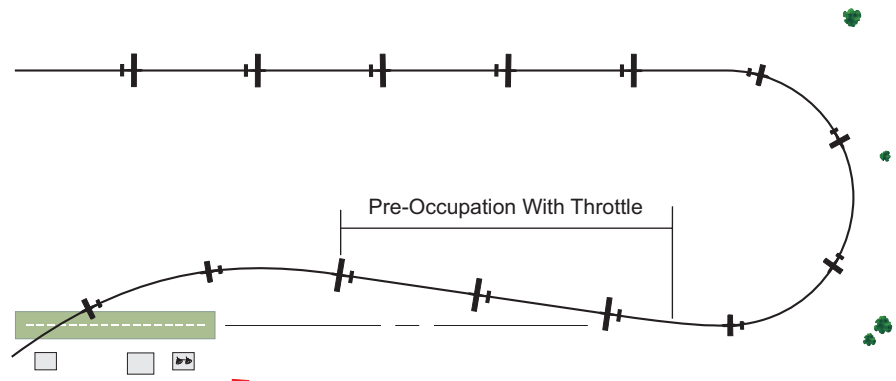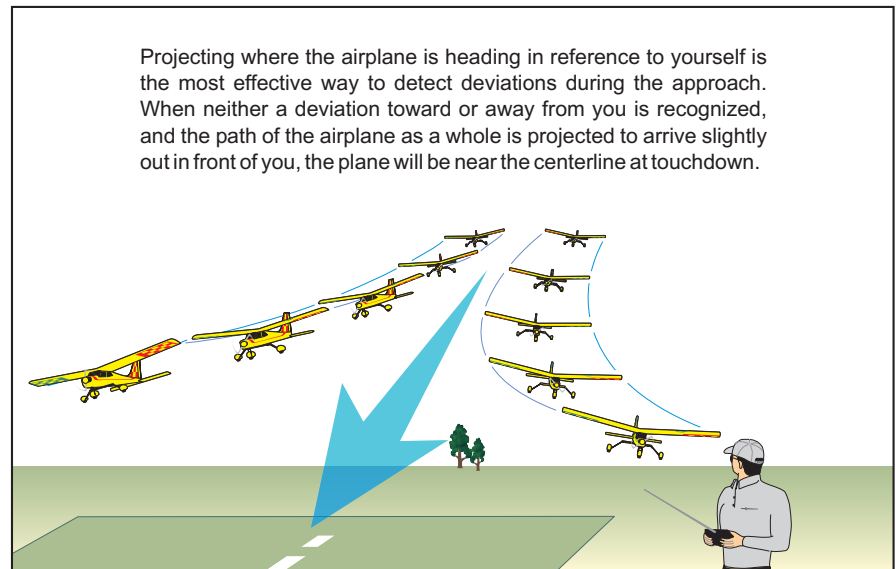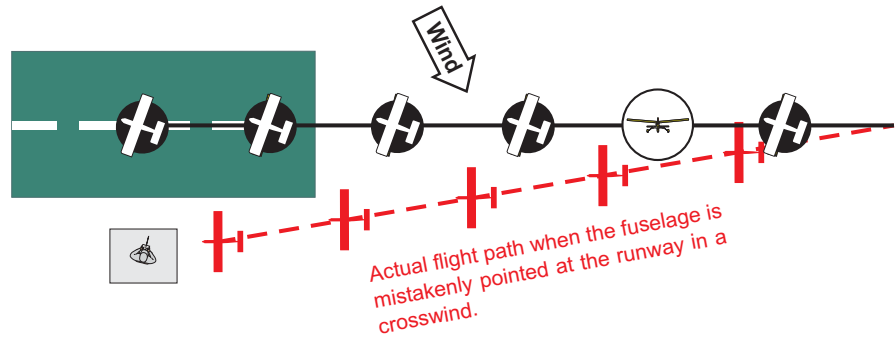
fuselage where you want the plane to go, in a crosswind you must track where the airplane as a whole is traveling irrespective of the fuselage. Side note: People debate every year about how to use the controls to correct for crosswind drift during landing. Yet, if they knew to guide the airplane as a whole (versus pointing it), they wouldn't have to correct for wind drift in the first place (and would have more time to improve in other areas)! So, rather than trying to guestimate the plane's track over the ground, project where the airplane as a whole is traveling (relative to yourself) and you will be able to recognize deviations during the approach before they become otherwise obvious (figure 6). The tiny corrections needed to perfect the centerline when it comes into view will then be negligible.

Lastly, pilots eager to land tend to focus so much on the throttle during the landing setup that they only make half efforts to get the airplane lined up with the runway (figure 7). Referred to as P.O.W.T. (Pre-Occupation With Throttle), this is the reason why so many pilots miss the runway centerline by as much as 50+ feet and/or 30 degrees (even though these errors are obvious to everyone watching). On the other hand, by focusing entirely on a timely exit of the turn and establishing a good line up with the runway before tinkering with the throttle, you will actually have more time to consider your throttle adjustments in the absence of needing to make a lot of course corrections during the approach.

Conclusion

As a general rule, difficulty in a certain area, e.g., landing, seldom has to do with needing more practice in that area, but needing to do a better job in the areas that are putting you into difficulty. Most landing difficulties are the result of not starting the final base leg turn in the right spot, thus increasing your workload, and/or needing to pay more attention to keeping the final turn reasonably level and thus preventing a build up of speed and anxiety. Knowing this, you are well on your way to mastering your landings regardless of the wind or what model you are flying. Happy Landings!

Proficient pilots guide the airplane as a whole to the desired touchdown location irrespective of the wind and where the fuselage is pointing.

Actual flight path when the fuselage is mistakenly pointed at the runway in a crosswind.

Projecting where the airplane is heading in reference to yourself is the most effective way to detect deviations during the approach. When neither a deviation toward or away from you is recognized, and the path of the airplane as a whole is projected to arrive slightly out in front of you, the plane will be near the centerline at touchdown.

Pre-Occupation With Throttle

Height and pre-occupation with the throttle (P.O.W.T.) often distract pilots from establishing a good line up with the runway, thus allowing deviations to grow until they require more aggressive corrections within the last moments before touchdown (usually blamed on the wind). Establishing a good lineup before tinkering with the throttle will result in needing fewer corrections during the approach and therefore increase the amount of time to contemplate throttle.
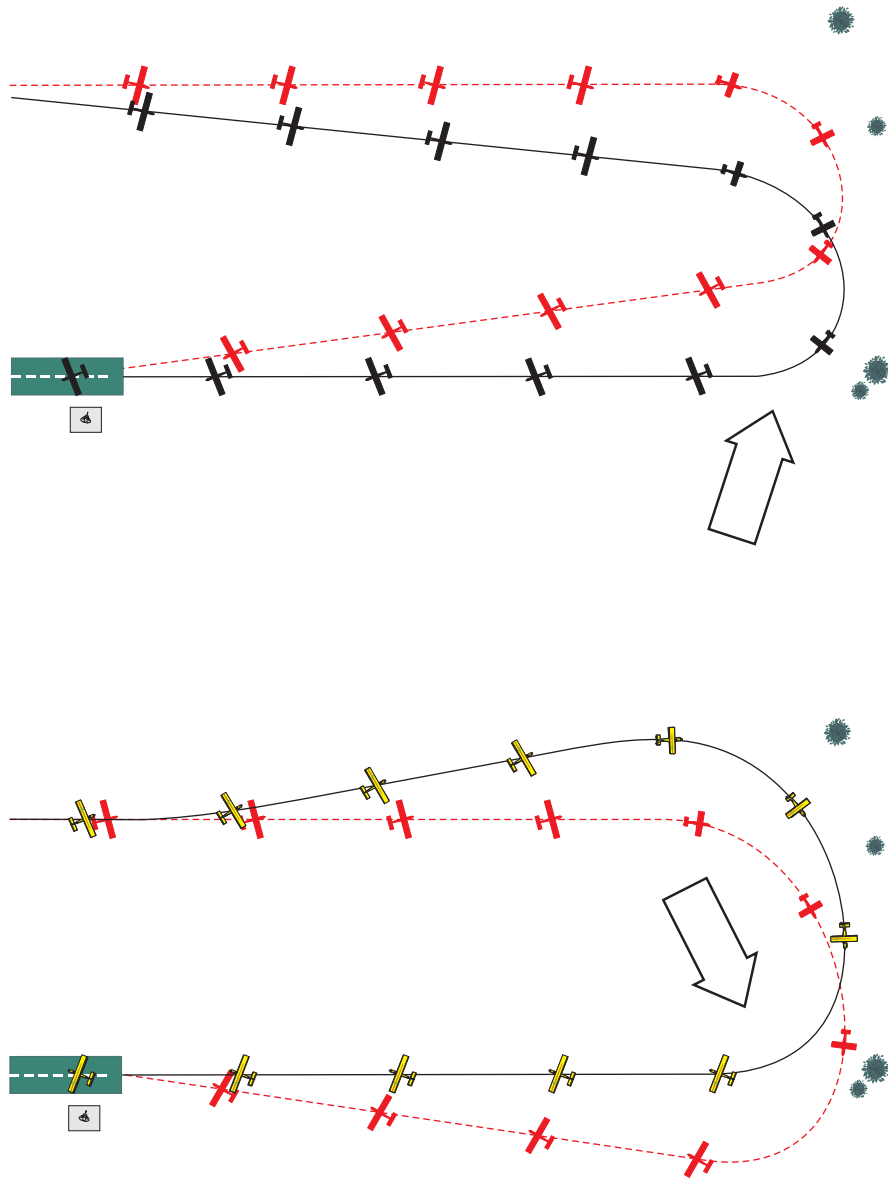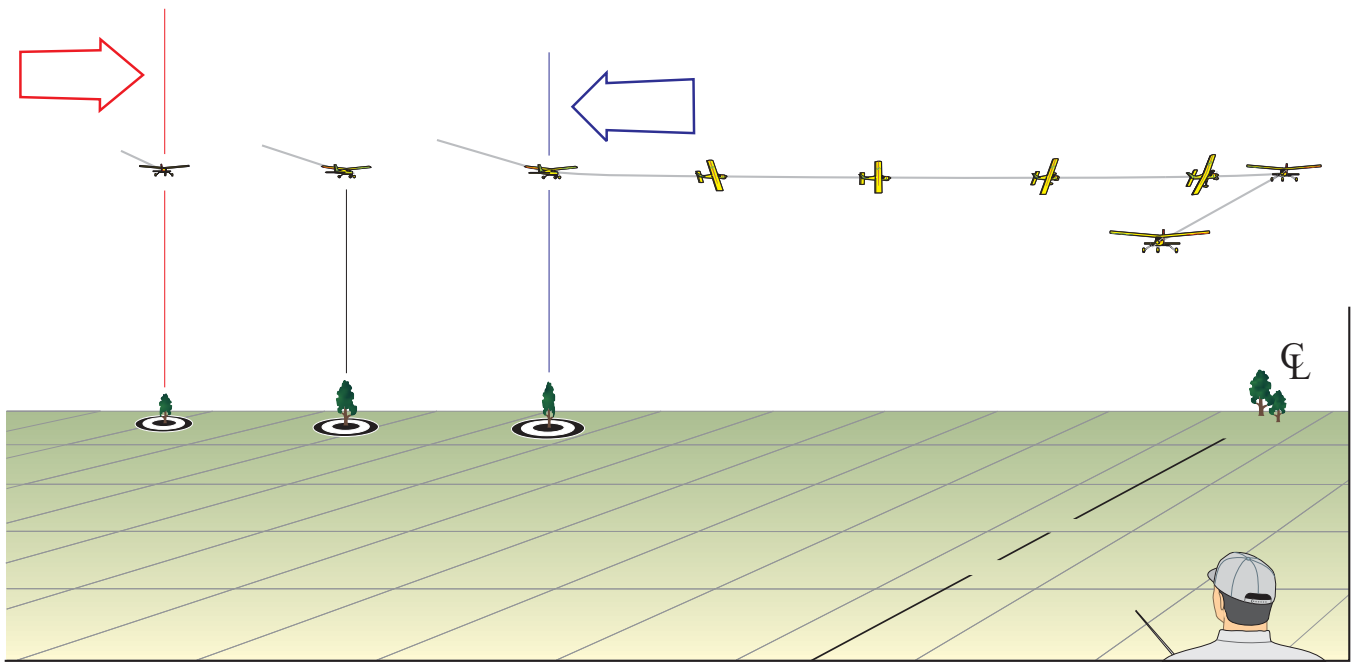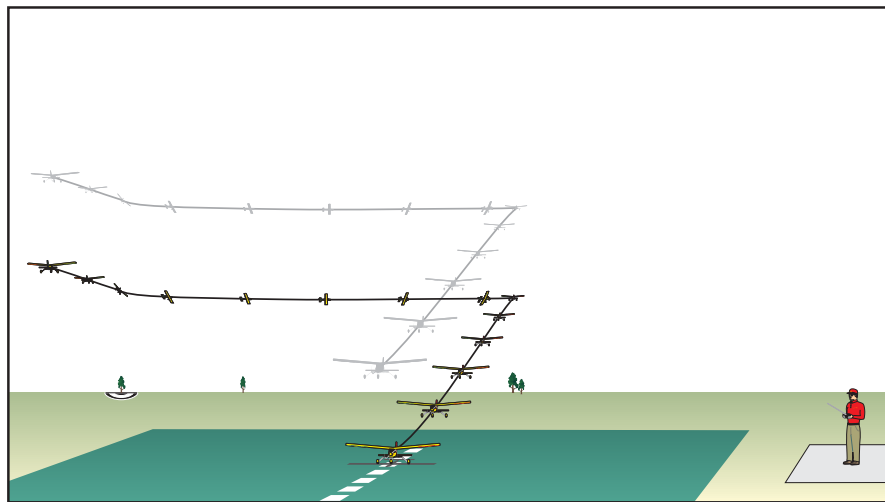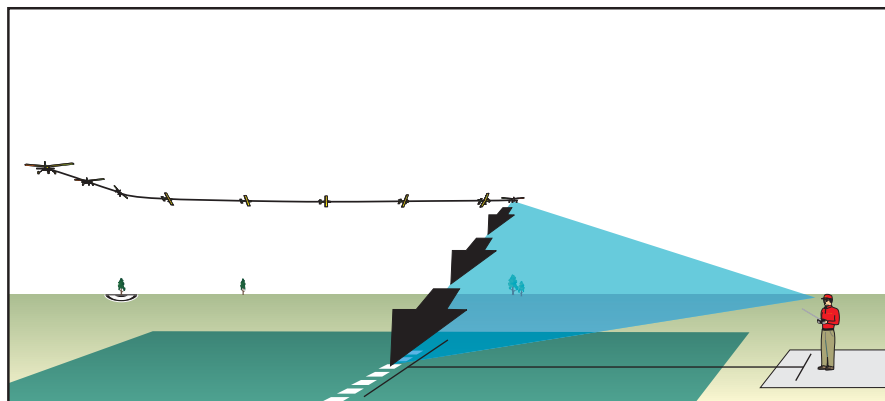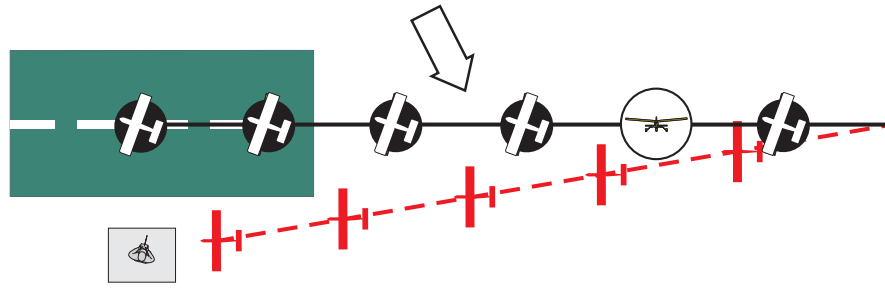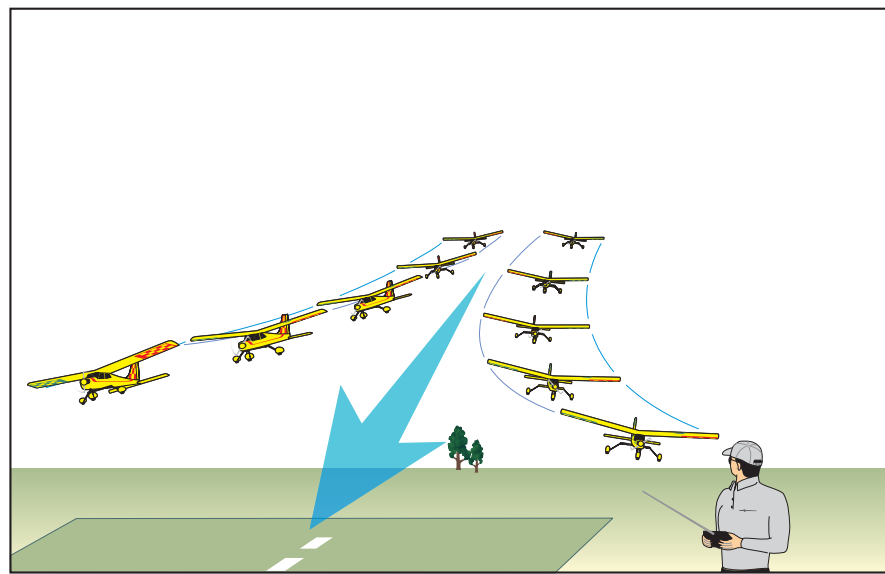
Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7