

From Sport Flier to Sportsman Competitor

(continued)

Here's the second part of the two-part series that began last month. With a bit of repetition, let's continue from where we left off.

As you execute each maneuver in the Sportsman sequence the judges will apply “downgrades” to each defect that they observe. (Again, see the Maneuver Descriptions at <http://nsrca.us/index.php/sequences> and the Schematic Diagrams at <http://nsrca.us/index.php/judging> to understand how the downgrades are applied.) Your score will be primarily determined by defects that occur at the **element** level of the maneuver. Remember, each maneuver is made up from a set of elements (rolls, lines, etc) just as the sequence is made up of a set of maneuvers.

Flying the airplane well requires not just looking at it in the sky but actually **seeing** it. By seeing the airplane I mean that you need to do more than simply know where it is in maneuver – you need to **see** what it is doing at each instant in the flight. For example, does the radius of a looping element remain constant as the airplane progresses through that element? Not only will the flight track be affected by the elevator (and other) inputs you make, but it will also be affected by the airplane's speed, its position in that looping element (vertical, inverted, upright), and of course the wind. You need to **see** what the airplane is doing and continuously adjust your inputs so that the airplane tracks through each element in the way it must to get the best score.

When you look at the results of your early contest flights you may be a bit puzzled (read disappointed) by the scores you received. You may ask yourself “What did I do wrong to get that score?” Sure, you remember some of the gross errors, a flopped stall turn for example, but you can be sure that you didn't **see** all of the other defects that were there to earn that many downgrades. So let's review many of the common mistakes that beginning pattern competitors often do not **see** as they fly their sequence. These errors will directly result in a downgrade, but just as important they often affect directly or indirectly the score on the upcoming maneuver or element. It is this second factor that often escapes the notice of a Sportsman pilot.

What goes wrong?

So let's go over the mistakes that frequently occur as you fly the Sportsman sequence. Since most errors are committed at the element level, that will be the focus here. (Some downgrades occur at the maneuver level, such box violations and “presentation” factors, but I want to focus on mistakes at the level of the element.)

Wings not level. Not having wings level is almost certainly the biggest contributor to downgrades. Of course there are downgrades for simply not having the airplane's wings level in nearly every element, but the real harm occurs by the side-effects that are induced in the next element. Consider the simplest case of a loop. If the airplane enters the loop with, say, the inside wing low it will corkscrew inward towards the pilot as the maneuver progresses. As a result, the maneuver will be downgraded for that error as well as for not having the wings level. Similarly, the airplane will not track properly on a pull to a vertical up-line if the wings are not level. Or, in a push to a 45 degree down-line. Or just about any time the elevator is pulled or pushed and the wings are not level. This cannot be said enough: Keep the wings level!

In too close. This, too, is a very common mistake in the Sportsman class. Often it occurs because

the pilot is flying an airplane that is smaller than two meters and there is a natural comfort level that comes with the better visibility from being in close. Being in too close will not usually directly result in a downgrade, but the collateral problems that result are killers. When the airplane is in too close the maneuvers become rushed and abrupt. The lines that are required between elements and between the maneuvers themselves begin to vanish, and the downgrades start to pile up. In extreme cases, you'll wind up with box violations on nearly every turnaround maneuver.

Learn to fly further out. At first this will probably take you out of your comfort zone and it will take a real effort to fly out where you need to be. How far is that? The ideal distance is 150 meters from the pilot station. If your airplane is less than two meters in size then a bit closer is okay, but you need to be far enough out so that you can gracefully execute each maneuver and have sufficient time to transition with from maneuver to the next with the required straight line between them.

Not using the entire box. This is similar to being in too close. There may not be a direct downgrade for not using the entire box, but it contributes to a rushed presentation that is not smooth and graceful. In the Sportsman class it's probably not necessary to kiss the edges of the box on every turnaround maneuver, but you should be using most of the space the full box gives you.

Flying too fast between maneuvers. You almost certainly do not need to fly between maneuvers (or even between elements) with all of the power that your airplane can deliver. Lots of power on an up-line? Sure. But pull the throttle back to a comfortable cruising speed as you fly straight and level between maneuvers and between the elements of more complex maneuvers. Flying too fast results in jerky maneuvers and a rushed presentation. Combine this with being in too close and not using the entire box, and your flight will be so rushed that the judges may have difficulty recording the scores. Understand that this will hurt your scores.

Impatience. Here we go again. This is another mistake, like not using the box and flying too fast, that contributes to a rushed presentation. It also usually results in direct downgrades for missing lines between the elements of a maneuver. Take the Half Reverse Cuban Eight, for example. After the pull to the 45 degree up-line there is a half roll that must be centered on the this line before the five-eighths loop is executed. This means that there must equal length line segments on either side of the half roll. In this case, the pilot should patiently let the airplane fly between the elements. **See** the airplane and don't execute the next element until its time has come. Being impatient will lead to poor geometry, and poor geometry leads to deductions.

Center maneuvers are performed too early. This is frequently a case of impatience that is manifest at the maneuver level rather than at the level of the elements within a maneuver. Be patient and **see** where the airplane is within the box. With practice you'll learn the point at which you should start each center maneuver. Be aware that wind conditions may affect where you want to start a maneuver. Upwind maneuvers may get compressed as the strength of the wind increases, and downwind maneuvers may likewise get stretched out. Learning how the wind affects where you should begin maneuvers requires even more practice. Remember, you will be downgraded if your maneuvers are off center, and the amount of the downgrade is in proportion to how much of the maneuver is on the wrong side of the center line. Since there are almost certainly other defects in your maneuver, severely missing the center can lead to a very poor score.

Down-line elements are not vertical. I don't want to get into the "why," but our airplanes have a natural tendency to pull to the canopy when they are in a vertical down-line. Left uncorrected, this results in the airplane slowly pulling towards level flight as it comes down, and this will likely lead to a

downgrade.

Many experienced pilots will use the mixing capability of their transmitter to add a little down elevator with low throttle to correct for this tendency. If you do not do this then you need to be sure that you push a very small amount of down elevator as the airplane dives straight down. Initially, doing this has a very high pucker factor and it is likely that you will feel uncomfortable. But, until you add this down elevator, you'll be receiving unnecessary downgrades because your down-lines are not vertical.

Not maintaining power over the top of a looping element. As you execute a looping element, whether it is a full loop or a partial loop element embedded in a larger maneuver, power must be maintained well past to the top part of the loop element. Too often there is a tendency to cut the power just as the airplane reaches the top of the loop. With the airplane inverted at the top of the loop (since this Sportsman it must be an inside loop) and a reduction in power, the airplane will quickly start to lose altitude and an excessively sharp radius will start to develop. To prevent this, maintain power until the airplane is perhaps 45 degrees past the top and then begin to reduce power gradually.

Poor throttle management. For me, throttle management has been one of the most difficult things to learn. Perhaps this is because it sometimes seems like a secondary consideration, but it is not. For this discussion, throttle management goes beyond having enough power where it is needed and reduced power where it is not. Proper throttle management means gradually increasing or reducing the throttle so that the transitions are smooth. To do this well you must anticipate the amount of throttle that will be needed in an upcoming element and then gradually move the stick to reach that level as it's needed. As with the other dimensions of controlling the airplane, you want control of the throttle to be graceful.

Adjusting the track of straight track with the ailerons. Sooner or later (sooner, probably) during the flight you will find that the airplane is no longer at the proper distance in the box, and it may even be tracking in or tracking out. As a former sport pilot you will be tempted to correct this by rolling the airplane so that it turns towards the desired flight distance. Yup, I just said "roll" and this means that the wings are not level and you may be headed for a downgrade. Try not to do this. Instead, use the rudder to yaw the airplane in the necessary direction. Like everything else, it will take some practice and persistence to break out of the troublesome habits you developed as a sport pilot. Of course, it's best to catch this error before it becomes too severe so that the correction can be made gradually.

Exit altitude above entry altitude. Many Sportsman maneuvers are entered at the baseline altitude of the flight. For several of the maneuvers that are executed on center the exit is at the baseline, so the exit altitude must be the same as the entry altitude. (Examples: Double Immelmann, Cobra, and Inside Loop) It is natural to feel fear as the airplane is headed down and towards the ground. The instinctive response is to pull on the elevator to avoid disaster. Too often, though, this results in an exit altitude that is higher than the entry altitude, and a downgrade is applied. Trust the airplane and trust your skills. Overcome this fear with practice, practice, practice.

Landing approach too high. To be awarded a full score on landing the airplane must touch down within 15 meters of the center-line that is in front of the pilot. When the airplane starts out too high on the landing approach it is very difficult to hit that target. As the airplane descends from a high altitude it does not slow down enough as the loss of altitude is converted to more speed. At this point, either the airplane lands too fast or it lands beyond beyond the target zone. If you find that you are consistently landing "hot" or "long" then set the approach to a lower altitude. Keep your approach low! If you find that you are going to be "short" you can always add power to slow the descent and stretch out the landing. I'll say it again: You can always add power.

How to spot the common mistakes

What we've just reviewed are the most common mistakes in the Sportsman sequence. For the most part, though, you don't **see** many of them and you find yourself puzzled by some of the scores you've received. **Seeing** them is hard when you're focused on controlling the airplane through the maneuvers. This requires practice and a level of confidence that takes some time to develop. Needless to say, there are many more things that can go wrong.

At a contest, engage the judges after your flight and ask them for comments. Most importantly, work with your coach/caller as you practice at home. If your coach is also new to pattern, tell him what are the common mistakes that he should be looking for. Ask him to be critical. If you don't know that you're making certain mistakes you can't correct them. The longer that goes on the more difficult it is to break the bad habit.

Now make a date with your coach on go out and practice. Unleash that pattern animal that lies within. **Most of all, be sure that you see the airplane and keep the wings level.** Now, with this in mind, GO PRACTICE!