

## Flying the 2007/08 Sportsman

By David Pilkington August 2007

### **Introduction**

Notes for competition pilots in Graduate and Sportsman. Based on flying a Standard Decathlon with a 150 hp engine and fixed pitch propeller. Easier if you're flying a C/S or Super D.

### **Preparation**

I assume that you want to win when you fly a contest, or at least score well. You often hear the comment that the best pilot won – I wonder what that means. Contests are often determined by a fraction of a percent in overall scores. Sit out on the judging line and listen to the variation in scores. The best pilot may have won, maybe not. All that can be truthfully said is that the pilot who scored the most from the judges did win. Of course, judges, being human are fallible. Judging is not easy. Anyway, this is not a discussion paper on judging, rather on flying to impress the judges.

You've got to know the rules. Three reasons. One is to avoid penalties. Second is to make the right decision to maximize your score when things don't go well – eg do you continue the sequence or break? Thirdly, the basic need to know what the judges should be looking for.

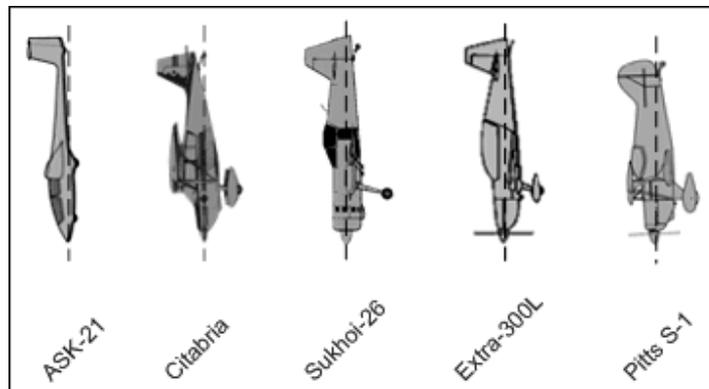
The best view of judging is at the British Aerobatic Association's website.

<http://www.aerobatics.org.uk/judging/judging-main.htm>

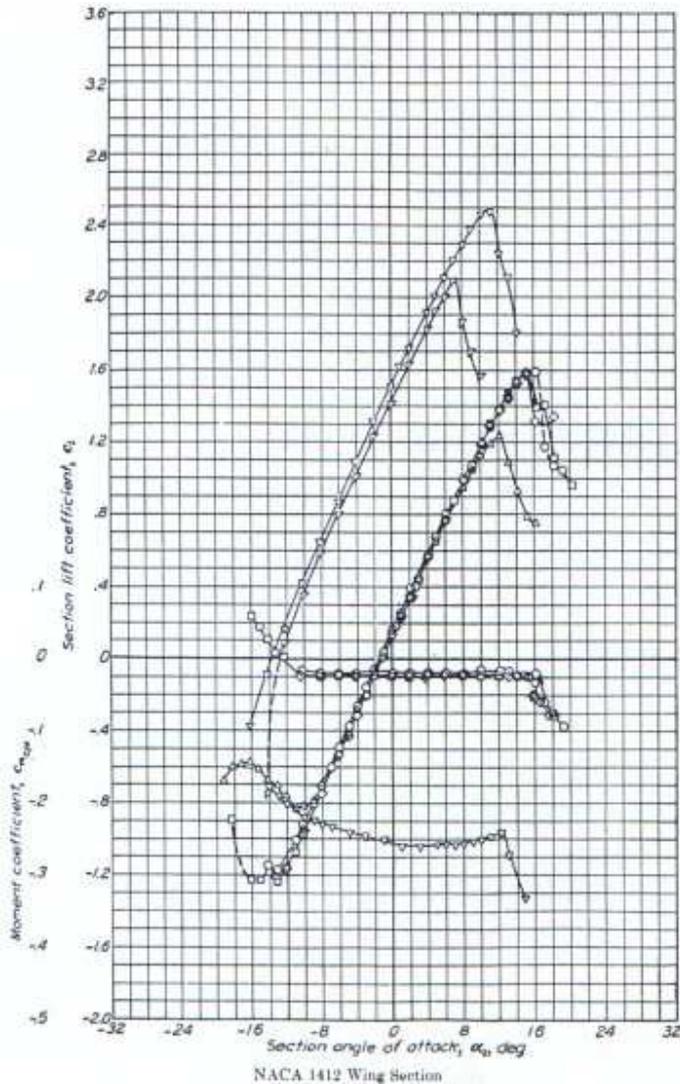
Prepare your aircraft. You need an LLL (Loudenslager Line Layer), sighting device or whatever. A very basic one is simply lines drawn on the side window using a white-board marker. Align them with the Zero Lift Axis.

<http://www.aerobatics.org.uk/judging/judging-zla1.htm>

The Decathlon has a ZLA of what?



## Flying the Sportsman Sequence



Airfoil section is NACA 1412. Its zero lift angle is about  $-1^\circ$ . Wing is set at  $1.5^\circ$  on the fuselage. So, the Zero Lift Axis is  $-2.5^\circ$ , let's say  $-2$  or  $3^\circ$ , nose-down compared to the fuselage reference line.

Hopefully the judges also know that!

The next thing to do is practice the individual figures to be comfortable with them. Fly parts of the sequence. Then work on the whole sequence.

Walk through the sequence many times before you fly. So many times that you get bored with it. Assess the external reference points, effect of wind etc. Consider where the judges are. If you can see them, they can see you. Starting off high, further away so they don't get a crick in the neck. Work closer as you get lower. They can't judge the nice shapes of your figures if you're over the top of them.

Contests these days rarely have boundary judges so just fly for the line judges.

## Flying the Sportsman Sequence

### **#1 The Humpty**

I start about 3300 ft AGL doing 135 kts. Start to ease over the top at about 80 kts. Draws a neat figure. No worries about energy with the first figure. That should leave about 130 kts for the next one.

### **#2 The Hesitation Cuban**

Starting at 130 kts compared to 120 for the common garden ½ Cuban Eight gives enough energy to draw a nice vertical up line. Finish with 125 to 130 kts for the next one.

### **#3 Roll Off the Top**

The important factor here is positioning. Where do you pull up to put the spin where you want it? Keep driving as far down the box as you dare.

### **#4 Spin**

Its drawn in the centre of the box so put it there. Plenty of words elsewhere about how to fly one and a quarter spins to exit on a straight line so not repeated here. You need to work at it so that the wings are straight just after the spin has stopped. Take the right action for spin entry and also just after recovery.

### **#5 Stall Turn**

A high K factor figure and right in front of the judges. This usually determines the winner. A common error is to have no line after the roll. Novice pilots see the airspeed increasing and the ground rushing up so pull too soon, and often too hard. The trick is to reduce power before the roll to keep the airspeed low. I typically pull 3.5 to 4 g at the bottom and exit with plenty of speed for the next figure.

### **#6 Half Cuban**

Similar to #2. Enter it as soon as you can after #5 otherwise positioning will be difficult. Exit with about 135 kts to give the appropriate entry speed for the next figure.

### **#7 Half Reverse Cuban**

Drive it right down to the other end of the box. 125 to 130 kts is a good entry speed. This is where the time taken to read the rules and set the ZLA will pay dividends. As the speed drops consider what line you should be flying. Then consider that the judges will be swayed by a neat figure not necessarily just flying to meet the criteria as written. Donb't let it get too slow for two reasons. One is that the line judged will appear awful even if flown "correctly". Second reason is that the looping portion will likely become pinched.

### **#8 Two Point Roll**

Pause for the same amount of time as it took to get inverted. Important to pause long enough that it is obvious that the roll actually stopped. Get ground critique. A common problem is to dish out of the last half of the roll.

## Flying the Sportsman Sequence

### **#9 & #10 The Turns**

Fly them by the book – the judging criteria book that is. Roll then turn. Stop the turn on the heading and then roll upright. With the standard Decathlon energy for the final figure is marginal. Are you going to start the roll at a low airspeed or cheat a bit and descend slightly in the final turn to gain a bit of speed?

### **#11 The Roll**

The recommended entry speed is 105 kts. You can roll it at 85 kts which is all you'll have out of the turns unless you descend while doing them. You're more likely to get a higher score for the roll at 105 than at 85. Of course, after the turns you can fly straight for a while to accelerate a bit. For those lucky enough to have a Super Decathlon you don't have this problem.

### **Height**

Coming out of #7 the height should be about 1800 ft above ground. You should have set minus 100 ft before take-off to give yourself a bit of a margin and to allow for altimeter lag. Any lower than 1700 ft AGL and you risk disqualification from the judges – it happens too often so keep it high.

### **Critique From the Ground**

Being coached from the back seat has limited benefit. Once you get to the stage of flying the sequence competently you'll need to arrange to be critiqued from the ground. The only way to develop your style to earn high scores. Some coaching may be done from the ground using a radio for such things as timing of rolls and pull-outs. Important – critique by tape recorder as there's a lot of detail to get right in order to win.

### **The Free Sequence**

Remember reading in the rules that the second flight is a Free Sequence. You have the option of flying the Known again but here's an opportunity to tailor the sequence to your aeroplane and your style. If done well its worth an extra 100 points or so. It means more practice as you now have two sequences to work on. Winning takes lots of practice anyway and this also means twice as much fun.

OLAN is free software to enable you to draw up your own sequence.

<http://www.aerobatics.org.il/olan/welcome.php>

We need a sequence of 132 K, I'll provide my Sportsman Free at a later date.