AGENDA ITEM 11.3

CIVA CATALOGUE SUB-COMMITTEE REPORT

Alan Cassidy, Chairman

Recommendations for Catalogue Changes for the Year 2010

The Catalogue Sub-Committee has considered proposals to CIVA from France and the USA which are related to changes in the Aresti Aerobatic Catalogue (Condensed).

Principles

The proposals of France include, inter-alia, some changes to the principles of the Catalogue as well as amendments to individual elements thereof. We deal with these matters of principle first.

Unlinked and Opposite Rolls

The current version of the Catalogue allows for Unlinked and opposite rolls, in pairs, to be added to both optional and mandatory roll locations within figures. The French proposal #4 suggests that these pairs of roll elements may be increased to triples.

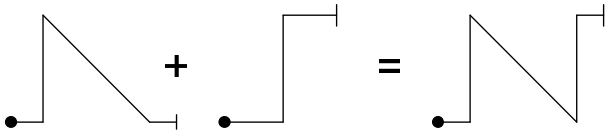
Although the current proposal relates to "true horizontal lines", no definition is made of this term. It is not clear whether this intends just figures from Catalogue row 1.1.x or whether it would apply in other instances, such as 7.1.x.

Bearing in mind the increased speeds of modern aircraft and the fixed size of the performance zone, and also bearing in mind the difficulties of judging rapid multiple flick rotations in opposing directions, the Sub-Committee does not consider it appropriate to increase these rolling combinations from pairs to triples. This opinion is the same regardless of whether the lines concerned stand alone or are part of a more complex figure.

The Sub-Committee does not see the benefit of the proposed rationale of "increasing combination possibilities" nor considers this a "logical continuation of other recent catalogue additions". Therefore the Sub-Committee does not recommend the adoption of French proposal #4.

Complex Figures

There has been a trend in recent times towards the increasing complexity of what is considered to be a single figure, simply by removing a



period of horizontal flight between two simpler figures. For example:

This has reached the stage where figures of high complexity can be created, but these already approach, and arguably exceed, the limit of what can be objectively judged.

Therefore, the Sub-Committee is not minded to accept any new figures that are combinations of two or more existing figures and which, when combined, present more than 3 locations on which rolling elements may be superimposed. The only current figures that may exceed the 3-location limit are Stall Turns containing two 45° lines.

The Sub-Committee considers that there are already many options available for Free Programmes that are seldom, if ever, used and does not consider that adding figures with up to 6 roll locations will create figures more likely to be used, nor that there is any currently observed uniformity. Therefore the Sub-Committee does not recommend the adoption of French proposal #3.

French Proposals

French Proposals 3 and 4 have been dealt with above.

French Proposal 1 was in two parts:

- Adding roll locations in the tops of shorter (<180°) looping segments
- Adding roll locations on horizontal entry and exit lines before or after longer (>180°) looping segments.

The Sub-Committee consensus is that adding additional rolling elements in looping segments of less than 180° will bring with it particular difficulties in the judging of symmetry. Furthermore, in some cases the addition of these rolling elements would increase the locations on a figure beyond the 3-location principle expounded above.

Therefore the Sub-Committee does not recommend the adoption of the first part of French proposal #1.

The Catalogue contains many instances in Families 7 and 8 of roll locations on horizontal entry and exit lines. It requires no change of principle to add such optional roll opportunities to other figures in these Families, with the proviso that the total number of roll locations in the modified figure does not exceed three.

Therefore the Sub-Committee recommends the adoption of this part of French proposal 1 in sub-families 7.23 to 7.30. These are shown in Appendix 1 at the end of this report. These changes should be made in both Power and Glider versions of the Catalogue.

French Proposal 2

The half loops at the top of figures in sub-families 8.1 to 8.4, columns 1 and 2, are invariably flown at much slower speed than in other looping figures, especially so in lower performance aircraft. In this respect, their deployment in sequences is quite different from that of figures such as 8.33.1 or 8.65.1. Additionally, this difference is reflected in the Judging criteria in FAI Sporting Code, Section 6, Paragraph 6.8.17, which permit smaller looping radii for these segments.

Therefore, without further discussion of these figures, and their judging criteria, but the Judging Sub-Committee, the Catalogue Sub-Committee cannot recommend the adoption of the French proposal #2, for either Power or Glider categories.

French Proposal 5

The Sub-Committee unanimously disagrees with the rationale of French proposal #5 and does not recommend its adoption by CIVA.

USA Proposal #2

Flick Rolls Initiated from Knife-Flight

Background

Part I, Paragraph 23 of the Aresti System (Condensed) explains the increased difficulty of flick rolls initiated from lines which carry the opposite loading from that of the flick roll itself. This is to say that positive flick rolls initiated on lines deemed to carry a negative angle of attack are harder to perform accurately than those initiated on lines deemed to carry a positive angle of attack.

Consequently, flick rolls are shown on pages 53 and 54 with higher or lower K-factors, those in rows 6 to 10 carrying the increased coefficients.

Furthermore, Paragraph 24 considers flick rolls added to vertical lines as the second element of an unlinked roll combination. In these cases, the angle of attack is deemed to be zero and the lower of the two possible K-factors is applied. It is not explicit, but is implied that in these situations the angle of attack of the fuselage with respect to the rudder is also zero.

Flicks From Knife-Flight

Under the current Regulations it is possible to create combinations of rolls on horizontal and 45° lines wherein a flick roll may be initiated from knife-flight. In such cases, the angle of attack of the wing can be deemed to be zero. However, in such flight conditions the angle of attack of the fuselage with respect to the rudder is not zero. In knife flight, the fuselage can be considered to be carrying an angle of attack determined by the use of "top" rudder to maintain the angle of the flgiht path against the force of gravity.

From this condition, either a positive or negative flick roll may be performed in either direction. In some instances the pilot will be required to use "top" rudder to initiate the flick while in others he will be required to use "bottom" rudder. This difference of rudder application is very similar to the difference in elevator application described in Paragraph 23 and which leads to the requirement for higher and lower coefficients.

Examples of this type of combination are shown in a new proposed Figure 24.

Determination of Fuselage Condition

The determination of the fuselage condition depends on the extent of the preceding rotation and also upon whether the following flick roll is in the same direction or the opposite direction to it. It does not

depend on whether the initial rotation is to the left or the right. It is therefore possible to determine the use of "top" or "bottom" rudder independently of the direction of rotation.

The classifications "top rudder" and "bottom rudder" are also given in the figure below.

It is apparent to all pilots undertaking these manoeuvres that it is easier to initiate a flick roll with "top" rudder than with "bottom" rudder.

Flicks initiated from knife-flight are not permitted under the current Regulations for unknown programmes. However, they might be used in Free Programmes or Known Compulsory Programmes.

Proposal

The Catalogue Sub-Committee Proposes that flick rolls initiated from knife-flight with top rudder be accorded the lower coefficients, while those initiated with bottom rudder be awarded the higher coefficient.

Suggested wording for a new paragraph to be inserted after the existing paragraph 24 is as follows:

> 25. In the case of flick rolls initiated from knife-flight, the K-factor accorded to the manoeuvre shall be determined by whether the flick is initiated using top rudder or bottom rudder. When top rudder is used, the lower coefficient shall apply, while the higher coefficient shall apply to flicks initiated with bottom rudder.

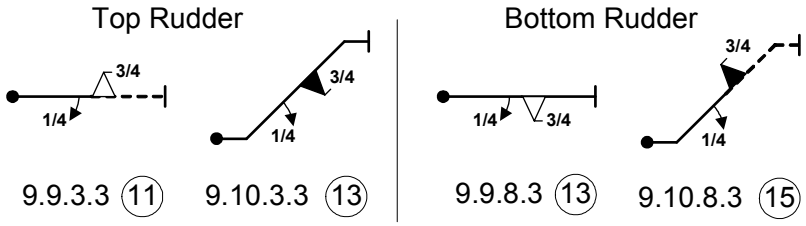


Figure 24

Alan Cassidy
Chairman

Appendix 1 - Revised Family 7 Figures