INTERNATIONAL GLIDING COMMISSION (IGC) - PROPOSAL FORM

Submit the proposal via email to IGC Secretary.

Date: 8 March 2019

Proposal submitted by: USA

This proposal is a: Year-1 ☐ Year-2 ☒ Other ☐ *mark the boxes with ✗ as appropriate*

Type the text changes in the space below *(show deletions as ~~strike-through~~ and additions as **bold underlined**):*
The Year 1 proposal was not complete, and the Year 2 proposal contains additional wording.
Detailed text of the proposal could be found in the Annex.

Type the reasons in the space below:
This Year 2 proposal completes the argument for changing the scoring system. The Year 2 proposal does not replace the Year 1 proposal; the two should be considered together as a single proposal.
More details about the reasons for the proposal could be found in the Annex.

Provide supporting data or reference to external documents for the proposed technical amendments in the space below:
A few graphs will be presented at the Plenary.
Annex to the proposal contains all necessary details (proposed text, reasons, etc.).

The proposal should be applicable from: **October 2019**

Sporting Code Volume: **SC3A**

Version/Edition: **2019**

Heading of section: **PART 8 SCORING AND PENALTIES**

Number & heading of the paragraph: **8.2 COMMON RULES**
8.3 DEFINITION OF SCORING PARAMETERS
8.4 CALCULATION OF SCORES

Page number(s) if appropriate:

See the next page!

Continue on the next page(s) if necessary

Approved Amendment (if applicable):

Final Wording of Proposal:

To define a new method for calculating scores in FAI-sanctioned gliding competitions.

Overall Votes Cast: ☐ For: ☐ Against: ☐ Abstain: ☐

ADOPTED: Yes: ☐ No: ☐

Continue on the next page(s) if necessary

PROPOSAL TO IGC PLENARY 2019
Year 2

From USA

PROPOSAL

To define a new method for calculating scores and to promote the new method in FAI-sanctioned gliding competitions.

SUMMARY

This proposal completes the proposal from USA originally presented in 2017. It affects the scoring formulas in Annex A.

1. Background

The Year 1 proposal can be found here: https://is.gd/fSRf6F (pdf).

At the 2017 Plenary, we proposed to change the scoring formulas to eliminate the moving boundary between speed points and distance points, and to score speed and distance independently.

The Year 1 proposal was incomplete in that it lacked a needed devaluation scheme.

This year, we complete the proposal by adding devaluation and score compression. This proposal does not supersede the Year 1 proposal – it is merely the completion of the existing proposal.

2. Overview of the proposed scoring method

The scoring step can be summarized as:

- Calculate distance points (maximum 750)
- Calculate speed points (maximum 1000)
- Give each competitor speed points or distance points, whichever is greater
- Apply devaluations as in the current rules
- Compress the scores if necessary

The details are in Section 4, below.

3. Discussion

The benefits of calculating speed points and distance points independently are presented in the Year 1 proposal and are not reproduced in detail here.

The most important benefits are that it will encourage earlier starts, decrease the motivation to stay in the gaggle, and reward bold tactics. It also will remove occasional strange incentives to slow down before crossing the finish line.

By eliminating the counting of outlandings in the scoring formula, the proposal also makes risk/reward calculations more transparent. By giving a bigger and fixed reward for finishing, it moves point spreads from the middle of the scoresheet to the winners, and further encourages earlier starts and independent tactical decisions. The Year 1 proposal discusses these points in detail.

This year we add the devaluation step and a method to compress the scores.

Devaluation

The devaluation step is not new. All of the considerations of weak weather, short tasks, and luck are equally appropriate in the proposed new system as in the current system, so we propose no change to the calculation and application of the Day Factor ($\mathbf{F}$) and the Completion Ratio Factor ($\mathbf{F}_{\mathbf{CR}}$).

Score compression

Score compression is an additional devaluation, in that it is applied as a factor to all the scores, thereby reducing the point spreads throughout the entire scoresheet.

Score compression keeps point spreads from getting out of hand. It is motivated by the desire to preserve competitiveness as the competition develops and to prevent aberrant results from spoiling a contest.

The need for score compression is independent of this proposal. It has been needed in the past, and its design here is based on analysis of our competition history. (The analysis will be presented at the 2019 Plenary). In our recent history, the average daily “winning margin” (see next section) has been 140 points. On occasions when days have been won by more than 200 points, questions have been raised about the validity of those days.

A side effect of the proposed new scoring system is that the problem of occasional large score differentials may get worse. For example, the reward for a single finisher on a day when the weather changes and nobody else gets close to the finish line is great, even considering the $\mathbf{F}$ and $\mathbf{F}_{\mathbf{CR}}$ devaluations.

We deal with this by limiting the winning margin to 200 points. Since 2010, the invocation of this limit, had it existed, would have occurred on just 11% of the Tasks. In all cases, those Tasks were set on days that were troubled by very difficult weather (usually storms).

Score compression occurs only when necessary, which will not be very often.

The application of devaluation and score compression to the proposed new method of calculating speed points and distance points will preserve the benefits of successful risk taking without allowing truly freakish results to spoil a contest.

4. Details of the proposed scoring method

We propose these steps to calculate each competitor’s daily score:

Step 1

Determine whether the day is valid, according to SC3A 8.2.1 (no change from the current rules). Do not proceed if the day is not valid.

Step 2
Calculate $\mathbf{Do}$, $\mathbf{Vo}$, $\mathbf{To}$, $\mathbf{Pm}$, $\mathbf{F}$, and $\mathbf{F_{CR}}$, according to SC3A 8.3.1, 8.4.1a or 8.4.2a (no change from the current rules).

Step 3
Determine each competitor's handicapped distance $\mathbf{Dh}$ and speed $\mathbf{Vh}$ (no change from the current rules). For non-finishers, $\mathbf{Vh} = 0$. Then calculate, for each competitor, distance points $\mathbf{Pd}$ and speed points $\mathbf{Pv}$:

a) if there is at least one finisher:
$\mathbf{Pd} = 750 \times \mathbf{Dh}/(\mathbf{Vo} \times \mathbf{To})$
$\mathbf{Pv} = 1000 \times \mathbf{Vh}/ \mathbf{Vo}$

b) if there are no finishers:
$\mathbf{Pd} = 750 \times \mathbf{Dh}/\mathbf{Do}$
$\mathbf{Pv} = 0$

Step 4
Give each pilot a provisional score ($\mathbf{S_P}$) equal to the devaluation factors times his distance points or his speed points, whichever is greater:

$$\mathbf{S_P} = \mathbf{F} \times \mathbf{F_{CR}} \times \max(\mathbf{Pd, Pv})$$

Step 5
Determine $\mathbf{S_{PO}}$ (the highest provisional score) and $\mathbf{S_{PM}}$ (the median provisional score of all the competitors, omitting those who have a zero score). Note: in this proposal, we are calling the difference ($\mathbf{S_{PO}} - \mathbf{S_{PM}}$) the "winning margin."

Step 6
Calculate the competitor's daily score:

$$\mathbf{S} = \mathbf{S_P} \times \min(1, 200/(\mathbf{S_{PO}} - \mathbf{S_{PM}}))$$

It can be seen from Step 6 that score compression occurs only when the winning margin is greater than 200 points, and the magnitude of the compression depends on the amount by which the winning margin exceeds 200 points.

5. Conclusion

In most racing sports, competitors are motivated to "get out in front and stay there." The paradox of glider racing is that, while this is a good strategy for the contest as a whole, it is a poor strategy for an individual racing day. A better daily strategy is to join the group and not to take sporting risks.

Our current formula, which causes the boundary between speed points and distance points to depend on the number of outlandings, creates especially strong incentives to stay with the gaggle in weak weather. Calculating speed points and distance points independently cures this strong disincentive for independent thinking.

By emphasizing finishing and by rewarding successful risk taking, the proposed new scoring system motivates each pilot to get ahead of the others, every day.