

F2024CF2B**4.2. CLASS F2B - AEROBATIC MODEL AIRCRAFT****F2Subcommittee**Remove:

Paragraphs and diagrams 4.2.1 - 4.2.16.16

Replace by

Paragraphs and diagrams 4.2.1 - 4.3.34 as per the attached document.

Reason:

a) Accuracy

In order to match the accuracy of manoeuvre descriptions and diagrams in the current F2B rules to the degree of precision displayed by today's competitors and models, we have made a complete revision of all related paragraphs in the current rules. This was achieved by transferring the manoeuvre descriptions (wording) from the March 2000 (and generally very well received) F2B Judges Guide descriptions into these new and revised F2B rules. Also, extra space was taken to provide larger, more detailed, clearer 2 dimensional manoeuvre diagrams (again, these are based on the March 2000 F2B Judges Guide).

b) Judging

To allow room for improved judging differentiation between contestants, a much wider marks bandwidth has been added. As a direct result of providing judges with this much finer "measuring instrument", and also because in F2B, ALL contestants are obliged to fly ALL manoeuvres in the same (there is no element of choice in F2B), K- factors have been removed. The March 2000 F2B Judges Guide has been edited accordingly, and has also been significantly shortened (largely because of moving all manoeuvre descriptions into the revised rules - item a) above).

c) Safety and Noise

The potentially dangerous pull test procedure contained in the current F2B rules has been replaced. In addition a noise monitoring procedure with associated noise limits have been added.

d) Fair proceedings

The large numbers (growing in recent years) of F2B contestants at several past World Championships has lead to a situation where judges have had to suffer extremely long "working" days. This is generally accepted to have an adverse effect on the quality of judging. In addition, the F2B event at World and Continental Championships has been under pressure from many contestants because this class is alone among all other F2 disciplines in allowing only 2 Official Flights before qualifying for a "Fly-off". The result of this policy is to reduce 85 contestants (in a field of 100 entries) to the status of mere tourists after only 2 flights of 7 minutes duration each - and for many, this occurs after spending considerable sums to travel half way around the world to enter the event! Thus the F2B Working Group were charged with finding ways to allow for possibly even more contestants v limiting judges' fatigue v allowing for an increase in the number of Official Flights for "rank and file" contestants v maintaining a check on the overall cost of organising major Championships (judges expenses). To achieve these aims, the newly revised F2B rules now offer parallel flight operations on two circles, AND also offer all contestants a minimum of 3 Official Flights (4 when operating with 2 Flight Circles). This new and completely revised F2B rule book covers all aspects and procedures for this method of operation in detail. The F2B Working Group feels that we are now offering an event of improved quality, giving a good equal chance to all contestants (not to Fly Off participants only); with firm rules to considerably reduce judges fatigue; staffing to hold judges expenses to around their current levels; and scope to allow for what many see as a very real possibility for entry lists of 120 or more. These goals are seen to be of prime importance, and not wishing to compromise these, we have found ways to improve the overall contest quality and fairness to all contestants (in particular at World Championships), by choosing to present a set of rules where the quality of the contest stands clearly ahead of considerations of total contest time required.

Remark: For practical purposes ("user friendliness", for all contestants, judges, organisers, officials, and FAI Jury alike), these new rules have been arranged in a logical "contest flow" and re-numbered accordingly. For clarity and ease of use, the document as now presented should retain its integrity and the order of paragraphs should not be changed.

Peter Germann & Andy Sweetland. F2B Work Group. November 13 2001, on behalf of the F2 Subcommittee.

ANNEX 4B - CLASS F2B JUDGES' GUIDE

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4B.1 Purpose

This Judges' Guide is an aid to judging and marking FAI Class F2B Aerobatics contests. It should be used both for the training of potential F2B judges and for maintaining the proficiency of judges who are already judging at F2B contests. This Judges' Guide forms an integral part of the FAI Sporting Code Section IV, Volume F2, applicable to Class F2B Aerobatics.

4B.2 Judges' Qualifications and Selection of Judges for Contests

The National Aero Club/Airports Council (NAC) of each country having F2B judges who join (or who wish to join) judging panels at international F2B contests should ensure that a defined standard of judging proficiency is reached and maintained by each of the judges for which it has responsibility. Each such NAC should therefore:

- a) Provide translations into their own language of both the current FAI Sporting Code Volume F2 applicable to F2B (that is: the whole of 4.2); and of this complete Judges' Guide (Annex 4B of the above Volume F2 document);
- b) Arrange suitable means and procedures to ensure that each judge is fully trained. This means arranging training courses which include regular and repeated group training in both theoretical (classroom) and practical (flight) venues where every aspect of both the current Sporting Code and of this Judges' Guide may be examined and practised in detail;
- c) Provide suitable means for officially recording each such training session attended by every judge within its national responsibility. Such official record should include dates, duration, and number of flights observed at such training sessions, and should also separately list details of all the national and international F2B contests at which each judge has been a member of the judging panel;
- d) Establish selection criteria which clearly define the minimum periods of undergoing such training and of actually judging high quality F2B flights at national level before prospective judges are eligible to be nominated or invited to join judging panels at international F2B contests.

Providing all the above will ensure that the judging of all international F2B contests is carried out to the same basic standard. These measures will also enable the organisers of international contests to be sure that all judges invited or nominated to a judging panel do indeed meet the required standards of qualification and experience. The organisers of all World and Continental Championships should therefore submit a list of proposed judges' names, together with their NAC qualification details as at paragraph c) above, to their own NAC and to the F2 Control Line Subcommittee of the CIAM not later than the month of January in the year in which the contest will be held.

To ensure a continuous pool of suitably qualified international F2B judges it is also recommended that, with suitable modifications, each NAC apply the criteria and procedures at the above paragraphs a) through d) inclusive to the selection and training of F2B judges for contests at national level.

4B.3 Sporting Code and F2B Manoeuvres Knowledge

The primary requirements for fair, accurate, and consistent judging are:

- a) A clear understanding of all of the applicable regulations and definitions within the complete Section IV of the FAI Sporting Code;
- b) An in-depth and fully detailed knowledge of all of the current F2B rules and manoeuvres descriptions (Section 4.2);
- c) A fully detailed knowledge of this complete Judges' Guide.

Self-study of all of the above points is a must, as is regular detailed group training at both classroom and flight venues. Such training should cover the practical application of all of the above points to the judging of high quality F2B contest flights. It is stressed here that individual "interpretation" of the intent and/or meaning of the F2B manoeuvre descriptions and rules is strongly discouraged – the purpose of this Judges' Guide and of the new rules is to eliminate any need for such "interpretation" by individuals.

4B.4 Judging Focus

In order to get a complete picture of each manoeuvre, judges should focus their attention on four major aspects:

- a) Shape:
This is the form or outline of the entire manoeuvre. But shape also relates to the position of each of the figures making up a complete manoeuvre. In manoeuvres consisting of repeated multiple figures (for

example: the Three Consecutive Inside Loops), an important criteria is that the shape of each individual loop figure is consistently the same for each repetition, and that consecutive manoeuvres should be performed with the second and subsequent manoeuvres all positioned in exactly the same place as the first (superimposed). All manoeuvres should be of the shape defined in the various manoeuvre rules - that is: round loops should be round with no flat spots; square manoeuvres should have clearly defined corners connected by "straight line" flight paths (refer to 4.2.1, paragraph b) of the F2B rules).

b) Size:

Manoeuvre sizes are often defined in the manoeuvre descriptions by specifying line elevation angle (in degrees of arc above the normal 1.5 metres (5ft) upright level flight height). Judges should watch for manoeuvres being flown with their tops above or below the specified 45 degrees, 38 degrees, and 90 degrees line elevation angles - and as a result of such errors, judges should therefore watch for complete figures which are either larger or smaller than specified in the respective rule. All such errors should be downgraded in the marks awarded by judges. The use of visible fixed terrain reference points at each site to help judges "fix into memory" both the 1.5 metres (5ft) normal upright and inverted level flight height, and 45 degrees lateral angle ($\frac{1}{8}$ th lap) is recommended. Contest organisers are also encouraged to erect suitable markers at contest sites to assist judges, particularly at sites where suitable natural fixed features are limited (refer to 4.2.3 of the F2B rules). Judges should practice using the available terrain features and any erected markers at each contest site during the Judges' Calibration Flight sessions held before the start of each particular contest (see also 4B.16 below).

c) Intersections:

The judging (and therefore the marking) of the intersections between the various elements of complex manoeuvres is also made easier if judges use fixed terrain reference marks and/or erected markers to "fix into memory" the visual position of the model when it passes an intersection point for the first time in a manoeuvre. Then, by comparing that "locked-in" point with the position of the model when it comes to the same intersection point at later stages of the same manoeuvre, judges will be more easily able to gauge the degree to which the pilot has met the intersection. As already noted, the erection of suitable markers is encouraged to assist in this practice at sites which lack suitable fixed terrain reference points (see also 4B.16);

d) Bottoms:

Normal upright level flight and inverted level flight is specified in the manoeuvre descriptions as being required to be flown at a height 1.5 metres (5ft) with an allowed tolerance of plus/minus 30 cm (1ft). These are all clearly described for each manoeuvre and judges should mark accordingly, as per 4B.7 and 4B.10 below, plus also paying close attention to the notes about values and tolerances which appear at 4.2.1, paragraph c) of the F2B rules.

4B.5 General Comments on the Marking of Manoeuvres

Although control line model aircraft actually fly on the surface of a hemisphere, when seen from the pilot's position, all manoeuvres are flown in two dimensional plane geometry. In other words, because all points on the surface of the hemisphere are at an equal distance from the pilot (that distance is the length of the lines), the pilot sees all manoeuvres as if they were drawn on a flat sheet of paper. But from their position outside the circle, the judges are firstly, not in the ideal position to view manoeuvres, and secondly, they also usually view manoeuvres from a point which is not directly opposite the centre line axis of each manoeuvre. Therefore the judges' marking tasks include a large element of personal analysis and situational awareness that **must** take their own (less than ideal) viewing position into consideration when awarding marks. There are however a number of precise definitions and values within the manoeuvre descriptions which judges must assess accurately if they are to award fair and consistent marks. These are:

- a) Recognition of level flight altitude of 1.5 metres (5ft), plus/minus 30 cm (1ft);
- b) Recognition of height by judging 45 degrees line elevation angle;
- c) Recognition of height by judging 38 degrees line elevation angle;
- d) Recognition of a position directly overhead the centre of the Flight Circle (that is: above the centre of the pilot's body and head if he is standing erect);
- e) Recognition of "vertical" climbing and diving flight paths (perpendicular to the ground);
- f) Recognition of "horizontal" flight paths (parallel to the ground);
- g) Recognition of "maximum 2.1 (6ft 9ins) metres radius" as an abrupt change of direction with the resulting requirement for the model to fly the tightest (sharpest) possible corner (see also 4B.8);
- h) Recognition of the correct "Start" and "Stop" points specified in the F2B rules for each manoeuvre (as highlighted within each manoeuvre description by the paragraphs "a) Start of manoeuvre:" and "x) End of manoeuvre:").

- i) Recognition of the fact that all the above values are specified as seen and measured from the pilot's viewing point, so judges must make due allowance for models of different sizes, flown on different length lines, and for the difference between the pilot's position and the judges' viewing position/s.

4B.6 Judging Objective Errors

The systematic deduction of point/s will provide the most uniformity in of standards in judging F2B contests. This system can be applied to all manoeuvres in the following way:

- a) Taking normal level flight as an example, judges are expected to award maximum points provided that the model remains inside the values and tolerances defined in the rules throughout all of the judged laps, and provided that it tracks smoothly without any visible height changes (that is: with no jerking or abrupt changes in height or attitude throughout the manoeuvre).
- b) But a level flight track which slightly exceeds the stated tolerance (for example: flying 40 cm - 1ft 3ins - off the flight track when plus/minus 30 cm (1ft) is required by the rule) should be considered as a "minor" error. Such a minor error would probably cause the judge to award a mark downgraded by perhaps 5 to 10 points.
- c) But if a level flight track was off the defined flight track by as much as twice the defined tolerance, this should be considered as a "medium" error, and would probably result in the award of a mark downgraded by 10 points or more.
- d) And level flight errors of three times the defined tolerance from the defined flight track should be considered as "major" errors, which would probably result in the award of marks downgraded by around 15 or 20 points.

In order to use this system successfully, judges must be trained to recognise flight path deviations of 30 cm (1ft) and 60 cm (2ft) at a viewing distance of approximately 45 metres (147ft). This will require relevant and repeated demonstrations to train judges to be able to readily gauge these measurements. Such training is highly recommended for all judges and this training should also emphasise the various tolerances defined in each manoeuvre description. See also 4B.10 below.

4B.7 Judging Subjective Errors

- a) "smoothly", etc:
A phrase such as "fly smoothly", is subjective, and the degree to which the model flies smoothly cannot be measured. Similarly, rules statements such as " ... the model should fly two smooth and stable laps ...", are difficult to apply when faced with the task of translating a certain lack of smoothness into an actual mark to be awarded to a contestant. As a basic guide, judges should consider terms such as stability and smoothness to be conditions defined by the absence of "wobbles" or "jerks". Therefore "wobbles" or "jerks" are errors, and each judge should decide on the extent of each such error seen, awarding a downgraded mark according to the severity of each of these errors that he/she has observed. See also 4B.10.
- b) Turn radii:
Similarly, judges should recognise that the intent of the manoeuvre descriptions regarding the radius of corners in manoeuvres such as Square Loops, Square Eights, Triangles, etc, is that models should turn as sharply (tightly) as possible. Therefore, although it is not possible for judges to accurately measure whether a model has or has not made a turn of between 1.5 (5ft) and 2.1 metres (6ft 9ins) radius, the intent is clearly that models should turn as tightly as possible when making such turns. Therefore judges should award the highest marks to models turning the tightest (sharpest) corners (provided that the required line elevation angles and/or the required model pitch attitude has also been achieved), and they should award the lowest marks to models making the largest (softest) such turns.

4B.8 Error Interpretation

- a) Each manoeuvre description clearly defines numerical values, size, shape, and position. Therefore judges can observe errors (failure to meet the specified requirement of, say, a line height value). But the rules provide judges with no guidance about the relative importance of those errors. So the judges' task is twofold in this respect - first, he/she has to count the total number of errors committed - second, he/she must **also** decide on the amount by which each of those errors has deviated from the standard specified in the respective manoeuvre description. As a general principle, a manoeuvre which is flown with a large number of major errors should result in judges awarding a lower mark than would be awarded for a manoeuvre which is flown with just a few errors, all of which are only minor errors.
- b) However, judges should also note that if a manoeuvre is flown with a very large number of errors, even if each of those errors may be considered as being, individually, only minor deviations from the manoeuvre description, it would be quite correct to award a lower score for that manoeuvre than for another manoeuvre which is flown with only a few errors but where each of those individual errors is considered to be a major deviation from the manoeuvre description. This is precisely one of the skills that judges are expected to develop and apply. See also 4B.10.

4B.9 Awarding Marks (Scoring)

- a) Segmented and multiple manoeuvres:
Many manoeuvres are described as consisting of several figures, and in many of those the figures have in turn been broken further down into separate segments. But all those segments and figures should be combined to result in the award of only a single mark for the complete manoeuvre. In addition, many of the manoeuvres detailed in the separate manoeuvre descriptions consist of multiple (repeated) figures. Once again judges should award only a single mark for each such manoeuvre (for example: the Three Consecutive Inside Loops Manoeuvre; and the Two Horizontal Square Eights Manoeuvre; and the Single Four Leaf Clover Manoeuvre should all attract only one mark each from each judge).
- b) Principles of marking:
Judges should **only** score (mark) manoeuvres flown between the points "Start of manoeuvre:" and "End of manoeuvre:", as set out in each of the manoeuvre descriptions. When the model reaches the "Start of manoeuvre:" point for each manoeuvre, each judge should assume that the manoeuvre will be flown within all the values and tolerances and other requirements defined in the respective manoeuvre description. (If this happened, this would of course mean that the judge should award the full maximum available 100 points if he/she has seen no errors by the time the manoeuvre is completed). But as the model proceeds through the manoeuvre, each judge will (usually!) observe some deviations from the manoeuvre rule requirements, so he/she should then mentally deduct point/s from the potential maximum of 100 points whenever a deviation is seen. The number of points to be deducted for each error by each judge will depend on his/her judgement as to whether each of those observed deviations is a "minor" error, a "medium" error, or a "major" error, as described in 4B.7. So after the model has reached the "End of manoeuvre:" point for the manoeuvre the judge's task is to total all the points which have been mentally deducted during the manoeuvre; and the final mark to be entered into the judge's Score Sheet is simply the maximum available 100 points, minus the total of all the points mentally deducted by the judge while the manoeuvre was being flown. This deduction method, whilst not easy to learn, and while requiring a considerable amount of instruction and practice, does offer the advantage of coming very close to producing repeatable results when using a consistent marking bandwidth for weighting each error seen.

- c) Marking bandwidth:
The following scale of Marks is listed to provide judges with a practical tool to apply to the principles above:

<u>Judges' Observations:</u>	<u>Marks to be awarded:</u>
Nil visible deviations from all values and other requirements: ...	Mark 100 points
Very few and/or only minor errors seen:	Range: Approx. 95 to 75 points (Note 1)
Few and/or minor errors seen:	Range: Approx. 75 to 45 points (Note 2)
More and/or medium errors seen:	Range: Approx. 45 to 25 points (Note 2)
Many and/or major errors seen:	Range: Approx. 25 to 1 points (Note 3)

Notes for Marking bandwidth table:

- Note 1: The number of points actually awarded for each manoeuvre will be dependant upon the total number of errors seen by each judge, and whether or not each judge decides that these are all only minor errors.
- Note 2: The number of points actually awarded for each manoeuvre will be dependant upon the total number of errors seen by each judge, and the extent to which each judge decides that each error is either a minor, a medium, or a major error.
- Note 3: As per Note 2 above, but the mark 0 (zero) points should be reserved **only** for manoeuvres which are listed at 4.2.18, paragraph b) of the F2B rules.

- d) Judges should use the entire marks bandwidth available, as shown above. This means awarding a mark of 100 points to any manoeuvre where the judge does not observe any errors at all (for example: an Inverted Flight manoeuvre where the model remains truly stable and without "jerking" within the allowed height tolerance of plus/minus 30 cm (1ft) throughout all judged laps). But as an example of the opposite extreme, a Two Consecutive Horizontal Square Eights Manoeuvre which is flown with line elevation angles of over 60 degrees, with "soft" corners, with angled sides, with slanted tops, with pullouts which are both too high and too low, and with intersections which are missed by several metres - in other words a manoeuvre which is not really recognisable at all - should be awarded a mark of around 10 points, perhaps even less.
- e) It should also be noted that since nothing written anywhere in the FAI Sporting Code defines terms such as "general impression", or "flying style", accurate and repeatable marking really is dependant **only** upon each judge deciding on the total number of errors committed, and the degree to which each error has deviated from the manoeuvre description. This **includes** judging subjective elements, where (apart from stability, which can be marked as discussed in 4B.8), the reality is that each contestant's score should depend simply and solely

upon the total number of all the errors observed by each judge, coupled with each judge's own personal decision as to how severe each of those errors were.

4B.10 Considering External Factors

- a) It is **not** permitted for judges' marks to allow for the effects of the wind in marking any phase of any of manoeuvre. 4.2.6 of the F2B rules gives clear guidance to judges and contest officials on exactly what wind and weather limitations are not acceptable for Official Flights, and this means that turbulent or stormy/gusty winds should **not** influence the marks awarded by the judges unless they exceed the limits in 4.2.6 of the F2B rules. If wind in excess of the limit in 4.2.6 does occur then 4.2.6 also instructs judges and all other contest officials on what actions to take. In other words, either the weather is "flyable" or it's not, and if it is flyable as per 4.2.6 then judges should score all Official Flights on exactly the same basis as if the wind was non-existent.
- b) Similarly, electrical storms are considered to be unsafe conditions for flying control line models, and as for excessive wind speed, 4.2.6 also instructs judges and all other contest officials on what actions to take if thunder and lightning do occur, or appear to be imminent during a contest. Other than excessive wind and electrical storms, the F2B rules make it plain that an F2B contest is an all-weather event, and uncomfortable though it may be for all concerned, the intention is that the contest should proceed as normal. Judges should therefore certainly not adjust their marks according to inclement weather.
- c) But on rare occasions other factors which are outside a contestant's control can occur, and sometimes these could have an affect the contestant's ability to fly in accordance with the manoeuvre descriptions. For example, when flying contests at sites where one or more grass circles are in use, irregularities in the ground surface could adversely affect a particular contestant's Take-off ground roll and/or lift off; or could affect the ground roll out at completion of the Landing Manoeuvre. Deviations from the described procedures for the Take-off ground roll (and lift-off) or Landing ground roll out should not be penalised if judges are of the opinion that such deviations were caused only by defects in the surface of the Flight Circle. Similarly, paragraph 4.2.12, item iii) of the F2B rules gives a possible example (a child or animal wandering into the Flight Circle), but no set of rules can be expected to be completely comprehensive in such areas. So judges should always be alert for an "extraordinary occurrence" which is both accidental in nature and beyond the control of a contestant, and which could also have an affect on a contestant's performance of an Official Flight. If in the opinion of the judges such an incident has occurred then they should be prepared to use their observation and reasoning to make sure (via the Head Judge, or his Deputy at contests using 2 Flight Circles) that the F2B CD is aware of the occurrence and offers a Re-flight accordingly.

4B.11 Scoring and Processing Manoeuvre/s if Missed by a Judge

If a judge misses the observation of a manoeuvre for any reason, he or she should not mark the Score Sheet with an estimated "typical" mark for the missed manoeuvre. Instead the judge who missed the manoeuvre should clearly write an "X" symbol on his/her Score Sheet in the space for the mark for the manoeuvre which has been missed. This symbol should then alert the Scores Tabulator/s to use a procedure which calculates the average of the marks for that manoeuvre as awarded by all the other judges. This calculated average mark should then be entered into the missing mark ("X") area by the Scores Tabulator/s before proceeding with processing all the remaining marks from that flight.

4B.12 Results Awareness

In order to prevent influence of any kind, no judge should look at tabulated results scores and/or at contestants' "placings" until after the completion of a contest. Neither should judges discuss individual Official Flights; nor the execution of manoeuvres; nor the marks awarded; nor the tabulated results (placings) or scores, with anyone at all during the whole contest. This includes discussions with the other judges, with any contestant/s, with any Team Manager/s, and with all spectators. The Head Judge should ensure that all members of the judging panel are aware of this requirement and that they all observe these requirements throughout the contest.

4B.13 Preparations by Judges before Contest Start

Well before the start of any Official Flights the Head Judge should meet the contest organiser and F2B CD to define/confirm/verify:

- a) Head Judge in charge; F2B CD (and Deputy Head Judge if at a contest using more than 1 Flight Circle);
- b) The availability of fixed terrain reference points, and/or erected markers (refer 4B.5 above);
- c) Availability and timing of Judges' Calibration Flights;

- d) Contestants' flying order;
- e) Contestants' Pull Test procedure and method of ensuring that all Pull Tests are performed;
- f) Procedure for Officially Calling contestants;
- g) The nominated Official Timekeeper/s, and how times will be communicated to the judging panel;
- h) Availability and method of Score Sheet collection service;
- i) Duration and timing of Rounds;
- j) Score Processing procedures;
- k) Contestant and classification and ranking procedures;
- l) Meal and break times; seating arrangements; sun shades; umbrellas; nearby toilets; etc.

4B.14 Judges' Calibration Flights

After each of the Judges' Calibration Flights arranged by the contest organiser judges should **not** discuss the scores that they have individually awarded. Instead they should go through a manoeuvre-by-manoeuve discussion, comparing and discussing their individual assessments of each error (including the severity of errors) that they have seen during every segment of every figure and every manoeuvre flown. In order to avoid the definitely undesirable "levelling" of marks awarded by each judge, the actual marks (scores) awarded by each judge should not be discussed. Indeed contest organisers are not permitted to issue Score Sheet forms for Judges' Calibration Flights. Rather, the judges' discussions should focus on the number, extent, and degree of severity of each error seen by using copies of the manoeuvre diagrams in the F2B rules as the basis for discussion. It should also be carefully noted that the content of all such Judges' Calibration Flight discussions should not be made public.

4B.15 Sighting Devices and Terrain Reference Points

Hand-held sighting devices should not be used. Whenever possible, fixed terrain reference points should be used to define intersections, "verticals", line elevation angles, and $\frac{1}{8}^{\text{th}}$ lap (45 degrees laterally) bottoms and lengths of manoeuvres and/or segments. As noted at 4B.5, contest organisers are strongly encouraged to erect suitable markers (for example for the 45 degrees lateral dimension specified in the relevant manoeuvre descriptions), especially when a particular contest site lacks natural fixed reference points. It is recommended that such reference points and/or markers be re-calibrated for each individual contest site on the occasion of each contest held at that site, and that these should be discussed privately between the judges prior to the start of Judges' Calibration Flights. Final agreement on useable natural reference points and/or erected markers should be reached between all members of the judging panel before the start of Official Flights.

4B.16 Timekeeping

It is common practice to assign Official Timekeeping duties to the Circle Marshall (and this is a definite requirement at World and Continental championships and other limited international contests). At other contests, judges should confirm who is responsible for this task before starting Official Flights, and at all contests judges should also confirm the method/s by which the results of the Official Timekeeping will be signalled to the judges. The times recorded by the defined Official Timekeeper are binding, but as a cross reference it is recommended that the Head Judge runs his own stopwatch in parallel to the Official Timekeeper. If a contestant's Official Flight exceeds the 7 minutes permitted, then the elapsed time should be recorded on the Score Sheets. In the event of any discrepancy the Head Judge's time and that of the Official Timekeeper the Head Judge should approach the Official Timekeeper and the F2B CD to resolve the matter accordingly.

4B.17 Consistency

Judges should use a consistent scale of awarding marks throughout all the rounds of a contest. This scale should be a personal instrument based upon the number of errors seen, plus the judge's own personal valuation of the severity of each error. This personal scale should have been arrived at by careful study of the current FAI Sporting Code (especially the F2B manoeuvre descriptions); by study of this Judges' Guide; and as a result of practical judging experience. Once the Official Flights of a contest have started, each judge's personal scale should remain firm and fixed and should **not** (for example) become influenced by factors such as discussions with others (including other judges); by the weather; by model speed; by model type, size, colour, or engine sound; or by an awareness of the reputation or results previously achieved by any particular contestant being judged.

4B.18 Execution of Manoeuvres

- a) "... a minimum of $1\frac{1}{4}$ laps."
Competitors may choose to fly more than, but may not fly less than $1\frac{1}{4}$ laps between each manoeuvre (plus the recommended Entry and Exit procedures, all as set out at 4.2.17 of the F2B rules). If a new manoeuvre is started after less than $1\frac{1}{4}$ intervening laps (plus the recommended Entry and Exit procedures) have been flown then that manoeuvre should be awarded a mark of 0 (zero) points; and 0 (zero) points should also be awarded to every other manoeuvre where less than $1\frac{1}{4}$ laps (plus the recommended Entry and Exit procedures) are flown between manoeuvres. This is to allow judges enough time to fully consider (and write down) the score for the preceding manoeuvre before the next manoeuvre is started.
- b) Judging the height of intervening laps:
The height of the laps flown between manoeuvres is purely a recommendation and should therefore not be judged or marked, but it should be noted that the F2B rules (4.2.17) do specify a height range within which each contestant should fly the intervening laps. This is to ensure that no contestant flies so high that the time taken to complete the intervening laps is too short to allow the judges to record their scores from the previous manoeuvre.
- c) Judging attempted manoeuvre/s:
If a contestant makes more than one attempt at any one manoeuvre during an Official Flight the judges should only mark the first attempt. Any further attempt/s at the same manoeuvre during the same Official Flight should not be marked at all. Similarly, if a contestant starts a manoeuvre but obviously does not complete it (for example, due to the motor suddenly losing power, thereby causing the contestant to descend immediately and then fly level laps) the manoeuvre which the contestant failed to complete should receive a mark of zero (0) points.

End