FEDERATION AERONAUTIQUE INTERNATIONALE
AEROMODELLING COMMISSION (CIAM) - PROPOSAL FORM

Reference Plenary 2010 - submit the proposal:

5.5.10. CLASS F5J - THERMAL DURATION GLIDERS WITH ELECTRIC MOTOR AND ALTIMETER / MOTOR RUN TIMER

Object: To provide a man-on-man contest for competitors, flying electric powered radio-controlled thermal duration soaring gliders. Several qualifying rounds will be flown in the contest. In each qualifying round, competitors are divided into groups and competitor's scores in each group are normalized to produce meaningful scores irrespective of changing weather conditions during the competition. The competitors with the top aggregate scores in the qualifying rounds then fly from two (2) up to four (4) Fly-off rounds, as a single group to determine the final placing. The exact number of Fly-off rounds will be announced by the organizer before the start of the event.

5.5.10.1. General Rules

5.5.10.1.1. Definition of a Radio Controlled Glider with Electric Motor

A model aircraft which is equipped with an electric motor, as a launching device, and in which lift is generated by aerodynamic forces acting on surfaces which remain fixed (except control surfaces). Model aircraft with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum extended mode. The model aircraft must be controlled by the competitor on the ground using radio control. Any variation of geometry or area must be actuated at distance by radio control.

The power pack for the electric motor may not have any fixed connection to the ground or another model aircraft in the air. Recharging of the power pack during flight by solar cells or any other mean is not permitted.

5.5.10.1.2. Prefabrication of the Model aircraft

Paragraph B.3.1 a) of Section 4, Part 2 (builder of the model aircraft) is not applicable to this class.

5.5.10.1.3. Characteristics of Radio Controlled Gliders with electric motor and altimeter / motor run timer

a) Maximum Surface Area ..... 150 dm^2

Maximum Flying Mass ..... 5 kgs

Maximum wingspan ..... 4 m

Loading ..... 12 to 75 g/dm^2

Type of battery ..... Any type of rechargeable batteries

Type of motor ..... Any type can be used

b) The radio shall be able to operate simultaneously with other equipment at 10 kHz spacing below 50 MHz and at 20 KHz spacing above 50 MHz. When the radio does not meet this requirement, the working bandwidth (max. 50 KHz) shall be specified by the competitor.

c) Any device for the transmission of information from the model aircraft to the competitor is prohibited. Any use of telecommunication devices (including transceivers and telephones) in the field by competitors, helpers or team managers is not allowed.

d) A Spread Spectrum technology receiver that transmits information back to the competitor-operated transmitter, is not considered to be a “device for the transmission of information from the model aircraft to the competitor”, provided that the only information that is transmitted, is for the safe operation of the model aircraft, i.e. signal strength and voltage of the receiver battery.

e) The competitor may use three model aircraft in the contest.

f) The competitor may combine the parts of the model aircraft during the contest, provided the resulting model aircraft conforms to the rules and the parts have been checked before the start of the contest.

g) For the sake of randomness of the starting order among the successive rounds, each competitor must enter three different transmitter frequencies with 10 kHz minimum spacing. The organizer is entitled to use any of these three frequencies for setting the flight matrices. Once the competitor is allocated one of these three frequencies he must not change to another frequency for all flights during the whole of the preliminary rounds other than for re-flights. In case of a re-flight the competitor can be called to use any of these three frequencies for this re-flight only, as long as the call is made at least 1/2 hour prior to the beginning of the re-flight in written form to the competitor (or team manager where applicable). The content of this paragraph (g) is not applicable, if competitor uses a Spread Spectrum technology system.

h) All ballast must be carried internally and fastened securely within the airframe.

i) No fixed or retractable arresting device (i.e. bolt, saw tooth-like protuberance, etc) is allowed to slow down the model aircraft on the ground during landing. The underside of the model aircraft must not have any protuberances. A folding prop or the tail, including the fin, is not considered as protuberance or arresting device.

j) Each model shall be fitted with an approved device, which records the maximum altitude reached between the time that the model leaves the competitor or his helper hand and 10 seconds after the motor is stopped. The device must also stop the motor 30 seconds after it is started at launch, if not already stopped within this time limit by the competitor. The devise must not allow the motor to be restarted during flight

k) To facilitate initial technical processing, all altimeters / motor run timers must be easily removable for compliance checking. To enable subsequent flight line processing, the units must be equipped with a display, or alternatively with a plug into which an external display unit can be connected, in order to facilitate the timekeeper recording the required data for scoring purposes, without the need to disconnect the unit from the receiver and/or the E.S.C. (Electronic Speed Controller) or remove it, from the model.

l) Any device other than an approved unit, which is carried in or on the model and which enables total or partial independent control over the model’s electric drive motor operation, is prohibited. Receiver and E.S.C. are not affected by this rule.

m) In Annex A relating to this rule, the following information is included:

- Specifications for the altimeter / motor run timer
- Installation environment
- Approved devices

5.5.10.2. Competitors and Helpers

a) The competitor must operate his radio equipment himself.

b) Each competitor is allowed one helper. When a team manager is allowed, he is also permitted to help the competitor.

5.5.10.3. The Flying Site

5.5.10.3.1. The competition must be held on a site having reasonably level terrain, which minimizes the possibility of slope and wave soaring.

a) The flying site shall include a marked launch corridor of 6 m width, with a central launch line. The launching corridor shall be arranged crosswind and shall include launch marks on the central launch line, at a minimum of 10 m. apart, one for each competitor of a group.

b) The flying site shall include landing spots, one for each competitor in a group. Each landing spot will correspond to one of the launching marks and will be arranged at least 15m downwind of the launching corridor.

5.5.10.3.2 The landing spots and the launch line must always be marked. It is at the discretion of the Contest Director, to define the means, by which the distance from the landing spot is measured, such as a tape. Also at the discretion of the Contest Director the landing area dimensions can be adjusted to allow best usage of the available space.

5.5.10.4 Safety Rules

a) No part of the model aircraft must land or come to rest within the safety area, as defined by the Contest Director.

b) The model aircraft must not be flown at low level (below 3 meters) over the safety area.

c) Every single action against the safety rules will be penalized by deduction of 100 points from the competitor's final score. Penalties shall be listed on the score sheet of the round in which the infringement(s) occurred. This penalty is also applied, in cases where the infringement(s) of the rule happened to a discarded attempt or round. A penalty earned in the preliminary rounds is not carried forward into the fly off rounds.

5.5.10.5. Contest Flights

5.5.10.5.1. a) The competitor will be allowed a minimum of four (4), preferably more, official flights.

b) The competitor will be allowed only one attempt at each official flight.

c) There is an official attempt when the model aircraft is released by the competitor or his helper.

d) All attempts are to be timed by a timekeeper. If no official time has been recorded, the competitor is entitled to a new working time according to the priorities mentioned in paragraph 5.5.10.6.

5.5.10.6. Re-flights

The competitor is entitled to a re-flight if:

a) his model in flight or in the process of being launched collides with another model in flight, or with a model in the process of being launched.
b) the attempt has not been judged by the official timekeeper.
c) his attempt was hindered or aborted by an unexpected event, not within his control.

To claim a re-flight considering the above mentioned conditions, the competitor has to make sure that the official timekeeper has noticed the hindering condition and land his model as soon as possible after this event.

Note that in the case the competitor continues to launch or continues to fly, after the hindering condition affected his flight, he is deemed to have waived his right to a new working time.

The new working time is to be granted to the competitor according to the following order of priorities:

1. In an incomplete group, or in a complete group on additional launching/landing spots;
2. If this is not achievable, then in a new group of several (minimum 4) re-flyers. The new group of re-flyers can be made up by other four (4) competitors selected by random draw. If the frequency or team membership of the drawn competitor does not fit or the competitor will not fly, the draw is repeated;
3. If this is also not achievable, then with his original group at the end of the ongoing round.

In priority-case 2 and 3, the better of the two results of the original flight and the re-flight will be the official score, except for the competitors who are allocated the new attempt. For those the result of the re-flight is the official score. A competitor of this group who was not allocated the new attempt will not be entitled to another working time in case of hindering during the re-flight.

5.5.10.7. Cancellation of a flight and/or disqualification

a) The flight is cancelled and recorded as a zero score if the competitor used a model aircraft not conforming to any item of rule 5.5.10.1. In the case of intentional or flagrant violation of the rules, in the judgment of the Contest Director, the competitor may be disqualified.
b) The flight in progress is annulled and recorded as a zero score if the model aircraft loses any part during the launch or the flight, except when this occurs as the result of a mid-air collision with another model aircraft.
c) The loss of any part of the model aircraft during the landing (coming into contact with the ground) is not taken into account.
d) The flight is cancelled and recorded as a zero score if the model aircraft is piloted by anyone other than the competitor.
e) The flight is cancelled and recorded as a zero score if, during landing, some part of the model aircraft does not come to rest within 75 meters of the centre of the competitor's designated landing spot.

5.5.10.8. Organization of the Flying.

5.5.10.8.1. Rounds and Groups

a) The flying order for the initial qualifying rounds shall be arranged in accordance with the transmitter frequencies in use, to permit as many simultaneous flights as possible. A minimum of 6 competitors should be scheduled for each group.

b) The flying order shall be scheduled in rounds sub-divided into groups.

5.5.10.8.2. Flying in Groups

a) Competitors are entitled to five minutes preparation time, which is counted from the moment their group is called to take position at the designated launching area, to the start of the group's working time.

b) The working time allowed to each competitor in a group shall be of exactly ten (10) minutes duration.

c) The organizers must positively indicate the start of a group's working time, by audible signal; see 5.5.10.14.1 for details.

d) Audible signal must be given when eight (8) minutes, of the group's working time has elapsed.

e) The end of the group's working time must be positively indicated by audible signal, as for the start.

5.5.10.9. Control of Transmitters

All provisions mentioned in Section 4, Volume ABR, section B.11 are applicable to this class as well.

5.5.10.10. Launching

a) At all times, the models must be launched into wind and within four (4) meters of the competitor's launch mark. An attempt is annulled and recorded as zero, if the model aircraft is not launched within the above specified distance. The launches must be straight forward, with the motor running. Any other type of launch is not allowed.

b) In zero or variable light wind conditions, the launch and final approach to touchdown direction, will be set by the contest director. Any other direction is not allowed.

c) An attempt is annulled and recorded as zero, if the model aircraft is launched before the start of a group's working time.

d) Prior to launch all altimeters /motor run timers, must be initialized on the designated landing spots, at ground level.

e) Zooming is not allowed. It is defined as the storage of extra energy in the form of kinetic energy (speed), which is then converted into potential energy (height) after the height reading is made. Any model observed by the designated timekeeper or Contest Director, to be attempting any zooming techniques, after the period of 10 seconds has elapsed, will be penalized by deduction of 100 points from the round score.

5.5.10.11. Landing

a) Before the contest commences, organizers must allocate a landing spot to each competitor

for all rounds. It is the competitor's responsibility to ensure, that he always uses the correct spot for landing.

b) Officials (timekeepers) must remain upwind and at least 15 m away of the designated landing spot, during the working time until immediately prior to the landing.

c) After landing, competitors may retrieve their model aircraft before the end of their working time providing they do not impede other competitors or model aircraft in their group.

5.5.10.12. Scoring

5.5.10.12.1. The attempt will be timed from moment of release from the hand of the competitor or his helper to either:

a) The model aircraft first touches the ground; or

b) The model aircraft first touches any object in contact with the ground; or

c) Completion of the group's working time.

5.5.10.12.2

a) The flight time in seconds, shall be rounded down to the nearest second (mm:ss)

b) One point will be awarded for each full second of flight within the working time, up to a maximum of 600 points (i.e. 10 minutes maximum) for the preliminary rounds or 900 points (i.e.15 minutes maximum) for the Fly Off rounds.

c) The launch altitude for scoring purposes shall be the maximum altitude recorded from the moment the model leaves the launchers hand until 10 seconds after the motor is stopped.

d) The altitude in meters shall be rounded down to the nearest meter.

e) Each meter of the launch altitude results in a deduction of half a point (0,5) point up to 200m and 3 points above it.

5.5.10.12.3 A zero score will be recorded for overflying the end of the group's working time by more than one (1) minute.

5.5.10.12.4 A landing bonus will be awarded in accordance with distance from the landing spot marked by the organizers according to the following tabulation:

Distance (m)	Points
Up to 1	50
2	45
3	40
4	35
5	30
6	25
7	20
8	15
9	10
10	5

over 10	0

5.5.10.12.5 The distance for landing bonus is measured from the model aircraft nose at rest to the landing spot allocated to the competitor by the organizers.

5.5.10.12.6. If the model aircraft touches either the competitor or his helper during the landing procedure, no landing points will be allocated.

5.5.10.12.7. No landing bonus points will be awarded if the model aircraft overflies the end of the group's working time.

5.5.10.12.8. The competitor who achieves the highest aggregate of points comprising of flight points, plus landing bonus points, less launch height deduction, less penalty points will be the group winner and will be awarded a corrected score of one thousand (1000) points for that group.

5.5.10.12.9 The remaining competitors in the group will be awarded a corrected score based on their percentage of the group winner's total score before correction (i.e. before being normalized for that group) and calculated from their own total score as follows:

$$\frac{\text{Competitor's own score multiplied by 1000}}{\text{Highest points total scored in the group before correction}}$$

5.5.10.13. Final Classification

5.5.10.13.1. If four (4) or less qualifying rounds are flown, the aggregate score achieved by the competitor, will be the sum of his scores for all rounds flown. If more than four (4) rounds are flown, then his lowest score will be discarded before determining his aggregate score.

5.5.10.13.2. At the end of the qualifying rounds, a minimum of ten (10) competitors with the highest aggregate scores will be placed together in a single group for the fly-off rounds.

5.5.10.13.3. The working time for each competitor who qualifies for the fly-off rounds will be fifteen (15) minutes duration. As before, audible signal will be given at the start of the group working time, at exactly thirteen (13) minutes and at exactly fifteen (15) minutes.

5.5.10.13.4 The scoring of the fly-off rounds shall be as in section 5.5.10.12.

5.5.10.13.5 Final placing of the competitors who qualify for the fly-off, shall be determined by their aggregate scores in the fly-off rounds; their scores in the qualifying rounds being discarded.

5.5.10.13.6 In the event that two or more competitors have the same aggregate fly-off score, final positions of those competitors shall be determined by their respective position in the qualifying rounds; the higher positioned competitor being awarded the higher final position.

5.5.10.14. Advisory Information

5.5.10.14.1. Organizational Requirements

a) The organizer shall ensure that each competitor has no doubt about the precise second that the group's working time starts and finishes.

b) Audible indication may be by automobile horn, bell or public address system etc. It must be remembered that sound does not travel far against the wind; therefore, the positioning of

the audio source must be given some thought.

c) To be a fair contest, the minimum number of fliers in any one group is six (6). As the contest proceeds, some competitors may be obliged to drop out for various reasons. When a group occurs with five (5) or fewer competitors in it, the organizer should move up a competitor from a later group, ensuring if possible, that he has not flown against any of the others in previous rounds and of course that his frequency is compatible.

5.5.10.14.2. Time-keeper Duties

a) The organizer must ensure that all timekeepers are fully aware of just how important their duties are and make certain that they are conversant with the rules particularly those that require quick positive action in order not to jeopardize a competitor's chances in the contest.

5.5.10.14.3 Groups

a) The composition of groups should minimize the situations where any competitor flies against another many times, except in the fly-off. It is recognized that, in practice, with certain numbers of competitors or where more than three rounds are flown, a situation where a competitor flies against another more than once may be unavoidable. This should be kept to a minimum.

b) In order to minimize the time needed to run the contest, it is very important to arrange the starting order to get the minimum number of groups per round, with the maximum possible competitors in each group. It is recommended that groups with vacant starting positions are put at the end of each round, to keep space free for any re-flights.

c) For World or Continental Championships, the starting order for preliminary rounds, has to ensure that, there are no competitors of the same country in the same group, as far as possible.

ANNEX A

Specifications for the altimeter / motor run timer

An electronic altimeter / motor run timer carried in an F5J model shall fulfill the following technical specifications:

- Must use barometric measurement technique.
- Altitude indication must be based on the International Standard Atmosphere, as defined in ICAO Document 7488/2
- Must record the maximum difference in pressure altitude from initialization until 10 seconds after the motor is stopped manually by the competitor or automatically by the motor run timer, whichever occurs first. At initialization, the altimeter must set a zero reference level so that the actual pressure altitude above ground level is recorded and displayed by the device.
- Must retain the data until specifically cleared, as is required before flight
- Give the data readout by visual means directly from the altimeter, with an internal or external display unit.
- The displayed altitude in meters shall be rounded down to the nearest meter.
- The device must stop the motor 30 seconds after it is started at launch, if not already stopped within this time limit by the competitor
- The device must not allow any further restart of the motor
- Can operate with all types of ESC
- Power will be only from receiver battery if OPTO ESC is used, or from motor drive power batteries if BEC ESC is used.
- Use of universal plugs (JR/Futaba)

Installation environment

- The electronic altimeter / motor run timer must be installed in such a way that it is protected from pressure fluctuations other than changes in atmospheric pressure which results from the height of the model above ground level.
- The device must be placed inside the model as supplied by the manufacturer. The use of any method that modifies the true barometric pressure at any time is prohibited.
- The ESC must always operate via its series connection to the altimeter / motor run timer and not with direct connection with to the receiver.

Approved altimeters / motor run timers