

BMAA UK National Paramotor Championships 2008

Task Catalogue

The tasks described below are examples of tasks that can be set by the Championship Director.

The Championship Director is free to set any tasks, including some that are not in this catalogue. The Championship Director may also select tasks from either the European Microlight Championships (Paramotors and PPT Classes) 2006 and/or the 2007 World Paramotor Championships Task Catalogues. The former can be found on the following website: http://www.rfae.org/~emc2006/documents_eng.html

Most of the tasks are taken from the FAI-CIMA section 10 task catalogue.

Economy tasks have been modified to allow for fuel to be measured by weight rather than volume and to score the pilots' fuel consumption in relation to their bodyweight.

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A1 PURE NAVIGATION

Objective

To fly a course between as many turn points or markers (from a given array) as possible within the time window and return to the deck or finish gate. The task may be scored as the distance flown or the number of turn points visited, as stated at the briefing.

Scoring

$$\text{Pilot score} = 1000 \times \frac{\text{NBp}}{\text{NBmax}}$$

Where, according to briefing;

Either:

NBp = The number of ground markers and/or turn points a pilot collects in the task

NBmax = The maximum number of markers and/or turn points collected in the task by a pilot landing/crossing the finish gate within the given elapsed time window.

OR

NBp = the distance flown by the pilot in the task.

NBMax = the maximum distance flown in the task by a pilot landing/crossing the finish gate within the given elapsed time window.

Penalties

- Pilots completing the timed element of the task outside the elapsed time window shall incur a 50% penalty on their NBp score if less than 10 minutes outside the window.
- Pilots 10 minutes or more outside of the window shall incur a 100% penalty on their NBp score.

A2 NAVIGATION, PRECISION & SPEED

Objective

To make a clean take-off from the deck, to fly a course between as many turn points or markers (from a given array) as possible within a given time, and to collect bonus points for landing at designated markers before returning to the deck or crossing a finish gate. The task may be scored as the distance flown or the number of turn points visited, as stated at the briefing.

Special rules

- The clock starts the moment the marshal makes the signal to take off, when the pilot's feet leave the ground or when crossing a start gate, whichever is briefed.
- At the start, the pilot scores 300 bonus points for a clean take off at the first attempt, 200 for the second, 100 for the third, zero for any attempts thereafter.
- In the case of landing markers, If the pilot elects to switch off his engine at least 5m above the marker and:

Makes a first touch on the marker: Landing bonus: 200 points

Misses the marker: landing bonus:

- If the pilot elects to not switch off his engine and:

Makes a first touch on the marker: Landing bonus: 100 points

- If the pilot falls over as a result of a landing: zero landing bonuses for that landing.
- If the pilot obstructs another competitor attempting to land at a landing marker penalties will apply.
- The clock stops the moment the pilot either crosses a finish gate or lands back on the deck.
- Any outside assistance: Score zero.

Scoring

$$\text{Pilot score} = \left(500 \times \frac{\text{NBp}}{\text{NBMax}} \right) + \text{Bto} + \left(200 \times \frac{\text{Bld}}{\text{BldMax}} \right)$$

Where, according to briefing;

Either:

NBp = The number of ground markers and/or turn points a pilot collects in the task

NBmax = The maximum number of markers and/or turn points collected in the task, by a pilot landing/crossing the finish gate within the given elapsed time window.

OR

NBp = the distance flown by the pilot in the task.

NBMax = the maximum distance flown in the task, by a pilot landing/crossing the finish gate within the given elapsed time window.

AND

Bto = Pilot's takeoff bonus points

Bld = Pilot's landing bonus points

BldMax = The maximum landing bonus points achieved.

Penalties

- Pilots completing the timed element of the task outside the elapsed time window shall incur a 50% penalty on their NBp score if less than 10 minutes outside the window.
- Pilots 10 minutes or more outside of the window shall incur a 100% penalty on their NBp score.

A3 NAVIGATION / ESTIMATED SPEED

Objective

To fly a course between any combination of turn points, markers and gates as defined at the briefing having declared estimated flight times or estimated times of arrival as required at the briefing, and return to the deck or cross a finish gate, within a given maximum elapsed time.

Special rules

- The maximum elapsed time will be given at the briefing.

Scoring

$$\text{Pilot score} = \left(700 \times \frac{\text{NBp}}{\text{NBMax}} \right) + (300 - T)$$

Where, according to briefing;

Either:

NBp = The number of ground markers and/or turn points a pilot collects in the task

NBmax = The maximum number of markers and/or turn points collected in the task

OR

NBp = the distance flown by the pilot in the task.

NBMax = the maximum distance flown in the task.

AND

T = The total difference in between pilot's estimated and actual times for all timed sectors. (>=300 = 300)

Penalties

- Pilots completing the task outside the elapsed time window shall incur a 50% penalty on their NBp score if less than 10 minutes outside the window.
- Pilots 10 minutes or more outside of the window shall incur a 100% penalty on their NBp score.

A4 NAVIGATION / ESTIMATED SPEED / PRECISION

Objective

To fly a course between any combination of turn points, markers, landing markers and gates as defined at the briefing having declared estimated flight times as required at the briefing, and return to the deck or cross a finish gate, within a given maximum elapsed time.

Special rules

- The maximum elapsed time will be given at the briefing.

- At the start, the pilot scores 150 bonus points for a clean take off at the first attempt, 100 for the second, 50 for the third, zero for any attempts thereafter.
- All landing markers may be attempted with engine on unless the marker is in the landing deck and is the final element in the task.
- If the pilot falls over as a result of a landing: zero landing score for that landing.
- If the pilot obstructs another competitor attempting to land at a landing marker penalties will apply.

Scoring

$$\text{Pilot score} = \left(400 \times \frac{\text{NBp}}{\text{NBMax}} \right) + (250 - T) + \text{Bto} + \left(200 \times \frac{\text{Bld}}{\text{BldMax}} \right)$$

Where, according to briefing;

Either:

NBp = The number of ground markers and/or turn points a pilot collects in the task

NBmax = The maximum number of markers and/or turn points collected in the task

OR

NBp = the distance flown by the pilot in the task.

NBMax = the maximum distance flown in the task.

AND

T = The total difference in between pilot's estimated and actual times for all timed sectors. (>=250 = 250)

Bto = Pilot's takeoff score

Bld = Pilot's landing points

BldMax = The maximum number of landing points achieved in the task.

Penalties

- Pilots completing the timed element of the task outside the elapsed time window shall incur a 50% penalty on their NBp score if less than 10 minutes outside the window.
- Pilots 10 minutes or more outside of the window shall incur a 100% penalty on their NBp score.

A5 NAVIGATION OVER A KNOWN CIRCUIT

Objective

To launch from the deck, fly to a start point and follow a known circuit, finding markers or identifying ground features from photographs and locating their positions on a map or crossing hidden gates.

There may be timing gates to take times if part of the task must be evaluated for time precision or for speed.

The task may finish with an outlanding.

Description

Competitors may be given:

- A series of headings to follow or lines drawn on a map or a description of the procedure to draw them.
- The location of a start point (SP) before which no markers, ground features or gates will be found.
- The time at which they must overfly the start point.
- The location of a finish point (FP) after which no markers or ground features will be found.
- Photos of any ground features or description of canvas markers to be identified.

Special rules

If the task is to contain a speed prediction element before takeoff the competitor must either:

- Declare the ground speed at which he plans to fly, or
- Select a ground speed from those specified at the briefing, or
- Declare crossing times at certain turn points.

The task will normally start and finish with a Deck Takeoff and Deck Landing and after completing the landing the competitor will be required to enter a Quarantine area for scoring.

Safety

During the task, competitors must not back-track along the track line against the direction of the task. If there is a need to backtrack competitors must leave the track line and fly back well clear of it before rejoining the track line at an earlier point.

Scoring

Spatial precision:

Vh = Value assigned to crossing a hidden gate or properly placing a mark on the map (e.g. 100)

Nh = Number of hidden gates correctly crossed or properly placed marks on the map (less than 2 mm error).
Markers placed between 2 and 5 mm error score ½ point.
More than 5 mm score zero.
Out of track marks score zero.

$$Qh = Vh * Nh$$

Time precision (when included in the task):

Vt = Gate value (e.g. 180)

Ei = Absolute error in seconds in gate i.
Maximum error is Vt.

Time gates not crossed do not add error.

$$Qt = \sum (Vt - Ei) \text{ (sum of gate value minus time error each gate crossed)}$$

Speed (when included in the task):

Vs = Relative value for the speed term

S = Pilot's speed in the speed section

$$Qv = Vs * S / Smax$$

Total:

$$Q = Qh + Qt + Qv$$

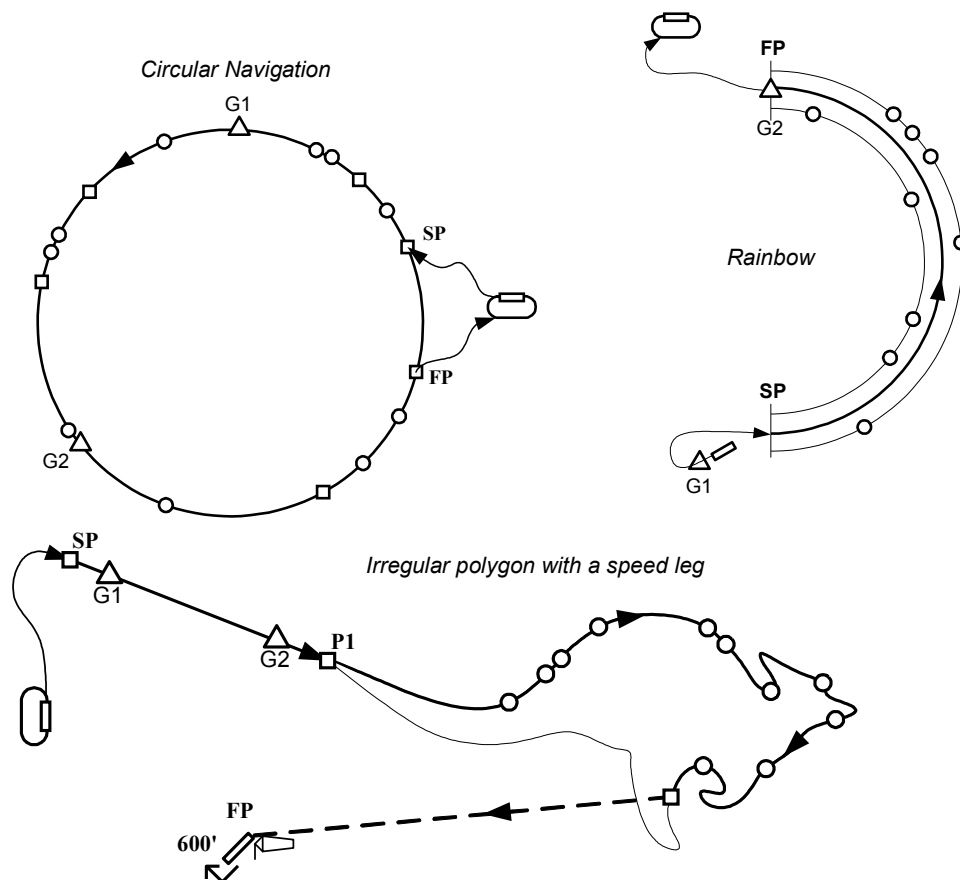
$$P = 1000 * Q / Qmax$$

Penalties

Each photo or marker correctly identified and located on the map to within 2mm and any ground speed element will score as briefed. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Backtracking against the task direction or crossing a hidden gate backwards: 100%
- Breach of Quarantine: 100%
- Crossing a hidden gate twice invalidates the gate.

Examples



A6 NAVIGATION WITH UNKNOWN LEGS

(May be offered as an optional overlay to a simpler task)

Objective

To launch from the deck, fly to a start point and follow a series of headings or known lines, finding markers or identifying ground features from photographs and locating their positions on a map or crossing hidden gates.

Certain ground features or markers will indicate a change of heading or the start of a leg to another point.

There may be timing gates to take times if part of the task must be evaluated for time precision or for speed.

The task may finish with an outlanding.

Description

Competitors may be given:

- A series of headings to follow or lines drawn on a map or a description of the procedure to draw them.
- The location of a start point (SP) before which no markers, ground features or gates will be found.
- Details of which markers or ground features indicate a point from which a new line must be drawn.
- The location of a finish point (FP) after which no markers or ground features will be found

Special rules

Depending on the specific task design, competitors may be given:

- Sealed instructions giving the location of next turn points or outlanding sites.
- The time at which they must overfly the start point.
- Photos of any ground features or description of canvas markers to be identified.

If the task is to contain a speed prediction element before takeoff the competitor must either:

- Declare the ground speed at which he plans to fly, or;

- Select a ground speed from those specified at the briefing.
- Declare crossing times at certain turn points.

The task will normally start and finish with a Deck Takeoff and Deck Landing and after completing the landing the competitor will be required to enter a Quarantine area for scoring.

Safety

During the task competitors must not back-track along the track line against the direction of the task. If there is a need to backtrack competitors must leave the track line and fly back well clear of it before rejoining the track line at an earlier point.

Scoring

Spatial precision:

Vh = Value assigned to crossing a hidden gate or properly placing a mark on the map (e.g. 100)

Nh = Number of hidden gates correctly crossed or properly placed marks on the map (less than 2 mm error).
 Markers placed between 2 and 5 mm error score ½ point.
 More than 5 mm score zero.
 Out of track marks score zero.

$Qh = Vh * Nh$

Time precision (when included in the task):

Vt = Gate value (e.g. 180)

Ei = Absolute error in seconds in gate i.
 Maximum error is Vt.

Time gates not crossed do not add error.

$Qt = \sum (Vt - Ei)$ (sum of gate value minus time error each gate crossed)

Speed (when included in the task):

Vs = Relative value for the speed term

S = Pilot's speed in the speed section

$Qv = Vs * S / Smax$

Total:

$Q = Qh + Qt + Qv$

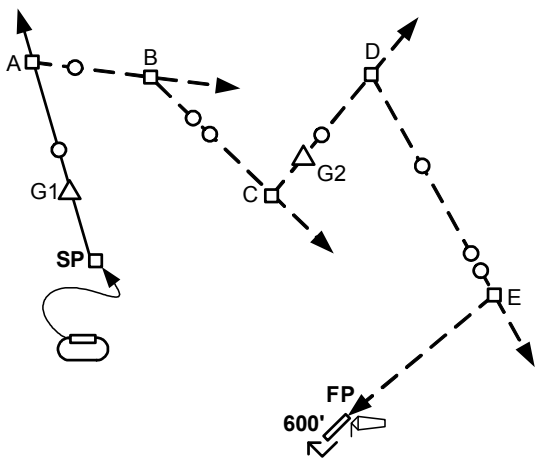
$P = 1000 * Q / Qmax$

Penalties

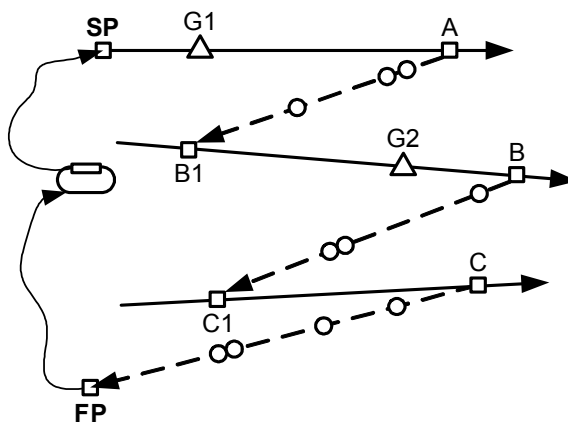
Each photo or marker correctly identified and located on the map to within 2mm and any ground speed element will score as briefed. The following penalties will apply:

- Take-off deck penalty: 20%.
- Landing deck penalty: 20%.
- Backtracking against the task direction or crossing a hidden gate backwards: 100%
- Breach of quarantine: 100%
- Crossing a hidden gate twice invalidates the gate.
- A penalty will be specified for braking an envelope seal.

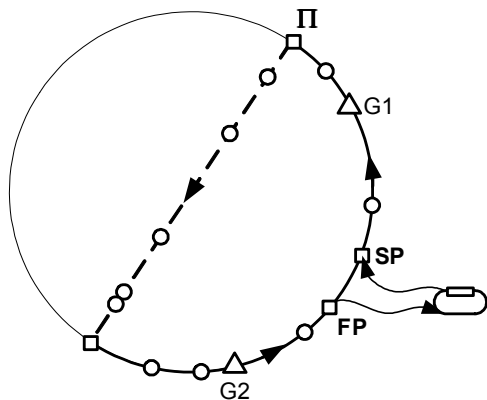
Examples



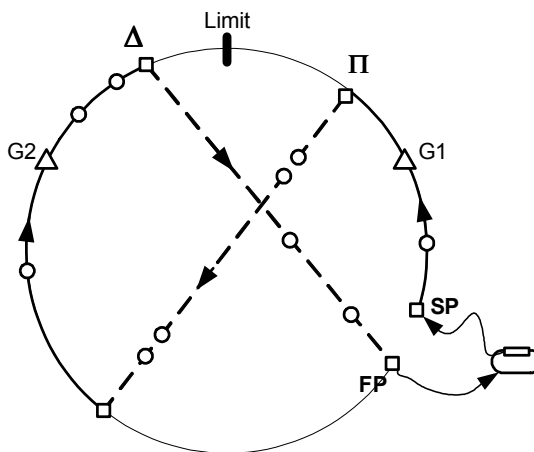
Sequential navigation



Linear navigation



Circular navigation and diameter



Circular navigation, diameter and reverse.

A7 NAVIGATION, SPEED, PRECISION

Objective

To make a clean take off from the deck, then, from the start gate, fly the largest possible equilateral triangle along pre-defined lines and return to the finish gate exactly precisely on the imposed elapsed time, before landing back on the deck.

Description

There are 2 infinite lines drawn on the map at 60 degrees to each other, originating from the start gate.

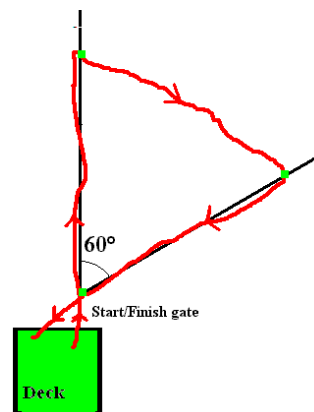
Fly along one of the line and the furthest point crossing this line will define leg #1 of a triangle, fly towards the other line and, again, the furthest point crossing that line (from start gate) will define leg #2 of the triangle, before returning to the finish gate to complete leg #3 of the triangle.

The pilot's elapsed time (from start gate to finish gate) must be as close as possible to the imposed elapsed time. Time deviation above or under incur penalties.

Only the shortest of the 3 legs is scored and therefore, an equilateral triangle is the most efficient shape to fly.

Scoring

Pilot score = [1000 x (dp - div) / max (dp - div)] - launch penalties



Where:

dp = the distance of the pilot's shortest leg

div = the pilot's deviation (+/-) from the imposed elapsed time, in minutes.

Penalties:

There is a 100-point penalty per failed launch, with a maximum of 400 points.

Landing outside the deck = 50%

Landing outside the field = 100%

B1 PURE ECONOMY

Objective

To take off from the deck with an unlimited quantity of fuel and achieve the best possible fuel consumption (litres/hour) in proportion to bodyweight, remaining airborne for at least one hour.

Special Rules

- Pilots are timed for their duration, from launch to landing. The amount of fuel used, divided by the duration gives the fuel consumption (litres/hour), then is divided by the bodyweight index.
- Pilots are weighed immediately prior to launch and immediately after landing in accordance with the process described in the Rules & Regulations
- Penalty for flying less than one hour (50%)
- Penalty for landing outside the deck (50%)
- Penalty for landing outside field (100%)
- Penalty for leaving the airfield after landing BEFORE being re-weighed (100%)
- There is a land-by time or period with penalty thereafter (100%)
- Pilots can carry as much fuel as they wish.

Scoring

Pilot score = (1000 x FCmin / FCp)

Where:

FCp = The fuel consumption of a pilot (litres/hour) divided by his/her bodyweight index

FCmin = The minimum scored ratio of fuel consumption to bodyweight index

Bodyweight index: example pilot bodyweight of 65kg = 0.65 and 115kg = 1.15

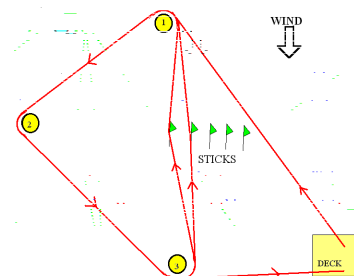
B2 ECONOMY & DISTANCE

Objective

To take off from the deck with an unlimited quantity of fuel, fly a given number of laps, ideally at least 40km total distance (for instance 20 x 2km laps) then return to the deck, having used as little fuel as possible.

Special rules

- Pilots are weighed immediately prior to launch and immediately after landing in accordance with the process described in the Rules & Regulations
- No height limit but each lap must be validated by kicking one stick on the upwind leg.
- Only one attempt at kicking a stick per lap.
- There are several sticks available to kick to avoid congestion but some of the sticks are positioned in such a way as to increase the lap distance.
- Time starts from launch and ends on landing back on the deck.
- Reverse championship order is preferable.
- Pilots can carry as much fuel as they wish. Penalty for landing outside the deck (50%)
- Penalty for landing outside the field (100%)



- Penalty for leaving the airfield after landing BEFORE being re-weighed (100%)
- Penalty for not flying the minimum required number of laps (100%)
- No penalty for flying more laps than the required number

Scoring

Pilot score = (1000 x FUmin / FUp)

Where:

FUp = The amount of fuel used by a pilot to fly the task divided by his/her bodyweight index

FUmin = The minimum ratio of amount of fuel used to bodyweight index

B3 ECONOMY & NAVIGATION

Objective

To take off with an unlimited quantity of fuel and locate as many given waypoints as possible within the elapsed time window, whilst achieving the best possible fuel consumption (litres/hour) in proportion to bodyweight before returning to the deck.

Special Rules

- Pilots are weighed immediately prior to launch and immediately after landing in accordance with the process described in the Rules & Regulations.
- Time limit (for instance 2 hours) with penalties for being late (for instance 50%).
- There may also be a minimum time limit if briefed.
- The Championship Director may set the task to either score on the number of waypoints visited or the distance flown.
- Pilots may carry as much fuel as they wish.
- Time starts from launch (or start gate) and ends on landing (or finish gate).
- Penalty for landing outside field (100%)
- Penalty for landing outside deck (50% on economy part)
- Penalty for leaving the airfield after landing BEFORE being re-weighed (100%)

Scoring:

Pilot score = (500 x NBp / Nbmax) + (500 x FCmin / FCp)

Where:

NBp = The number of waypoints a pilot collects in the task (or the distance flown)

NBmax = The maximum number of waypoints scored or (maximum distance flown)

FCp = The fuel consumption of a pilot (litres/hour) divided by his/her bodyweight index

FCmin = The minimum ratio of fuel consumption to bodyweight index

B4 ECONOMY & PRECISION

Objective

To make a clean take-off in the time window with a given quantity of fuel, stay airborne as long as possible within a defined area and land on one of a choice of landing markers situated within the deck before the end of the time window.

Special rules

- The pilot scores 300 bonus points for a clean take off at the first attempt, 200 for the second, 100 for the third, zero for any attempts thereafter.
- Departure from view of the marshals or egress from the permitted flight area may incur penalties, if briefed.
- When landing, If the pilot elects to switch off his engine at least 5m above a marker and:

Makes a first touch on the marker: Landing bonus: 200 points

If the pilot elects to not switch off his engine and:

Makes a first touch on the marker: Landing bonus: 50 points

- If the pilot falls over as a result of the landing: zero landing bonus.
- If the pilot obstructs another competitor attempting to land at a landing marker penalties will apply.

Scoring

$$\text{Pilot score} = \left(500 \times \frac{T_p}{T_{\text{max}}} \right) + B_{\text{to}} + B_{\text{ld}}$$

Where:

T_p = The pilot's time

T_{max} = The longest time taken to complete the task

B_{to} = Takeoff bonus points

B_{ld} = Landing bonus points

B5 SPEED TRIANGLE AND OUT AND RETURN

Objective

To take off with an unlimited quantity of fuel and fly around a given circuit (for instance a triangle) in the shortest possible time and then fly as far as possible in the direction of the pilot's choice (unless briefed otherwise) before returning to the deck, whilst achieving the best possible fuel range (km/litre) for the whole flight.

The fuel range (km per litre) is calculated as the whole flight distance divided by the quantity of fuel used multiplied by the bodyweight index.

Description

Part 1: Speed: Prior to launch, the pilot is weighed in accordance with the process described in the Rules & Regulations. The pilot's take off time is recorded. The pilot flies the given circuit and returns to the deck where he is timed, possibly kicking one or more sticks on arrival to stop the clock for the speed element.

Part 2: Fuel Range: The pilot then flies in a given direction to a point of pilot choice and returns to the deck where he/she is re-weighed to calculate fuel used.

Special Rules

- There will be a maximum (and possibly a minimum) elapsed time limit.
- The second element may require pilots to fly to (and subsequently declare) 2 distant points, such that the 'out and return' distance is calculated from the total of three legs. This may be used where available airspace is limited.
- Penalty for exceeding time limit (50% of range score)
- Penalty for landing outside the deck (50% of range score)
- Penalty for landing outside the field (100% of range score)
- Penalty for leaving the airfield after landing BEFORE being re-weighed (100%)

Scoring

$$\text{Pilot score} = (500 \times T_{\text{min}} / T_p) + (500 \times FR_p / FR_{\text{max}})$$

Where:

T_p = The pilot's time in the speed section

T_{min} = The fastest time in the speed section

FR_p = The fuel range achieved by a pilot (Km/litre) for the whole flight multiplied by his/her bodyweight index

FR_{max} = The maximum product of fuel range by bodyweight index

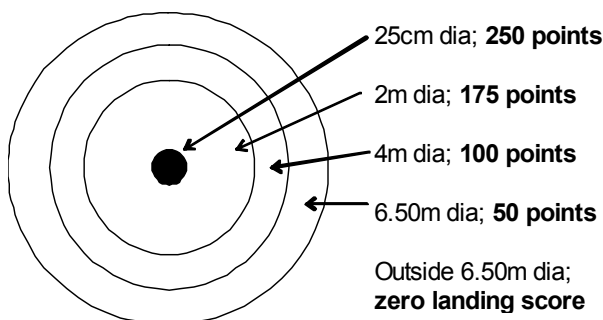
C1 PRECISION TAKE-OFF AND LANDING

Objective

To make a clean take off at the first attempt in the deck, and subsequently land as near as possible to a target.

Description

The pilot is permitted four takeoff attempts, climbs to 500ft overhead the target, cuts the engine before passing through a gate and tries to make a first touch as near as possible to the centre of a target consisting of:



- A series of concentric circles for PF1 and PF2 classes.
- A series of 5m wide parallel strips for PL1 and PL2 classes (where possible)

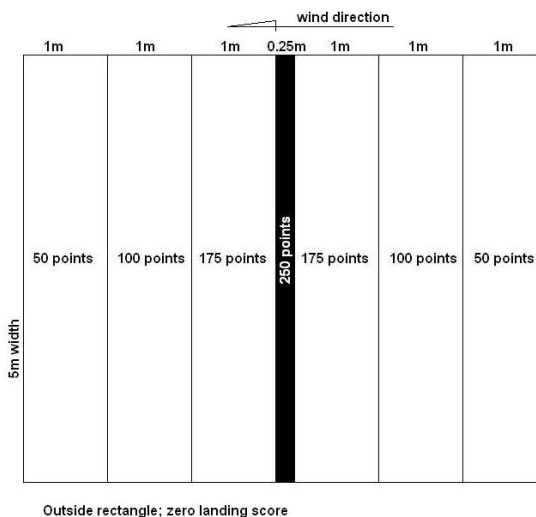
Special rules

- The pilot scores 250 points for a clean take off at the first attempt, 170 for the second, 90 for the third, zero for the fourth.
- The circuit to be flown will be detailed at briefing.
- The first touch of the ground by the pilot's foot (PF) or the aircraft wheels (PL) is the point from which the pilot's score will be derived. A first touch on the line scores the higher score. When more than one PL wheel touches simultaneously, the point chosen is the one in favour of the pilot.
- Contestants will be awarded a zero score if the pilot or any part of the aircraft touching the ground outside the deck while undertaking the task.
- Contestants will be awarded a zero landing score for:

Engine not stopped before the gate.

Gate not passed correctly.

Falling over as a result of the landing.



Scoring

Pilot score = (Bto + Bld)

Where:

Bto = Takeoff points

Bld = Landing points

C2 PRECISION CIRCUIT IN THE SHORTEST TIME

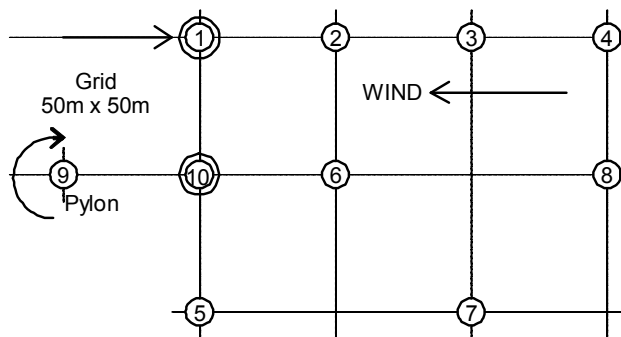
Objective

To strike a number of targets laid out in a given order in the shortest possible time and return to the deck.

Description

8 targets 2m in height are laid out 50M apart in two arrays. The first array has 4 targets in a straight line, the second array has 4 targets in a slalom.

A further target is placed 50M behind target 10 to serve as a pylon which must be flown round (by the body of the pilot) before target 10 is struck.



Special rules

- A valid strike on a target is one where the pilot or any part of the paramotor has been clearly observed to touch it.
- To count as a strike, target No. 9, the pylon, must be rounded in a CLOCKWISE direction.
- A strike on target 1 starts the clock, a strike on target 10 stops the clock.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.
- Failure to strike the first or last target or touch the ground at any point between them: score zero.

Scoring

- N = number of targets
- T = time from first to last target
- Q = N^3 / T
- Pq = $500 * Q / Q_{max}$
- Ps = $500 - 30 * (T - T_{pmin})$. Minimum Ps = 0; if N < 9, Ps = 0.
- P = Pq + Ps

C3 FAST / SLOW SPEED

Objective

To fly a course as fast as possible and then as slow as possible (or vice versa).

Description

A straight course consisting of four equally spaced 'kicking sticks' between 250m and 500m long is laid out facing approximately into wind.

The course shall be flown twice. The order will be briefed (fast then slow or slow then fast).

The pilot makes a timed pass along the first course, returns to the start, and makes a second timed pass in the same direction.

There may be two courses but they must be of equal dimensions and orientation and separated by at least 200m flying distance.

Special rules

- A valid strike on any stick is one where the pilot or any part of the aircraft has been clearly observed to touch it.
- For each course, the clock starts the moment the pilot kicks the first stick and stops the moment he kicks the fourth stick.
- The pilot may have 3 attempts at kicking the first stick on each run.
- If the pilot misses the second or third stick then he is considered 'too high', penalty 50% course score for each stick missed.
- The maximum time allowed for a pilot to complete each course is 5 minutes.

In the slow course;

- If the pilot or any part of his paramotor touches the ground or the fourth stick is missed: VP1 = zero and EP = zero
- If the pilot zigzags: Score zero.

In the fast course;

- If the pilot or any part of his paramotor touches the ground: VP2 = zero and EP = zero
- The pilot may have three attempts at kicking the fourth stick.

$$\text{Pilot score} = \left(125 \times \frac{V_{p1}}{V_{max}} \right) + \left(125 \times \frac{V_{min}}{V_{p2}} \right) + \left(250 \times \frac{E_p}{E_{Max}} \right)$$

Where:

Vmax = The highest speed achieved in the fast course, in Km/H

Vp1 = The speed of the pilot in Km/H in the fast course.

Vmin = The lowest speed achieved in the slow course, in Km/H

Vp2 = The speed of the pilot in Km/H in the slow course.

E_p = The difference between the pilot's slowest and fastest speeds, in Km/H

E_{max} = The maximum difference between slowest and fastest speeds, in Km/H

C4 THE FOUR STICKS

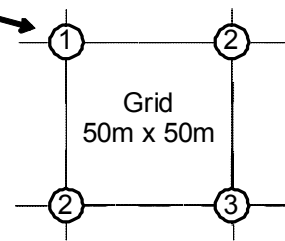
Objective

This task is intended as a small break task between elements of an overall task.

Description

There are 4 standard kicking sticks set at the corners of a 50m x 50m square. The pilot must kick 3 of the 4 sticks. The first stick the pilot kicks may be any of the 4 sticks. The third stick the pilot kicks must be diagonally opposite the first, the second stick may be either of the two other sticks.

Approach from
direction of
pilot's choice



Special rules

- If this task is used to take a time for the purposes of an element of the overall task then the time shall be taken the moment the pilot strikes the first stick.
- The pilot may have as many attempts as necessary at striking the first stick.
- Only ONE attempt is allowed at kicking both the second and third sticks.
- There shall be one group of 4 sticks for every 15 competitors in the task.
- For class PL2 landing markers may replace sticks.
- On approach to the task, pilots should choose a "free" group of sticks. However if, in the opinion of the marshals on duty a conflict with another aircraft existed (depending on the overall task, for example if there is a timing involved) both should kick only one stick and then depart on the rest of the overall task. Both pilots will then be given the opportunity to have ONE further attempt at this task as soon as possible after the end of the overall task.

Scoring

The scoring should be integrated into the overall task as NQ. If the pilot fails to kick either the second or third stick then for each stick then the penalty shall be no more than 5% of the overall task score.

C5 PRECISION TAKE-OFF AND LANDING

Objective

To make a clean take off at the first attempt in the deck, and subsequently land as near as possible to a target which is:

- A point for PF1 and PF2 classes
- A 5 m long line marked on the ground perpendicular to the wind direction for PL1 and PL2 classes.

Description

The pilot is permitted four takeoff attempts, climbs to 500ft overhead the target, cuts the engine before passing through a gate and tries to make a first touch as near as possible to the centre of a target.

Special rules

- The pilot scores 250 points for a clean take off at the first attempt, 170 for the second, 90 for the third, zero for the fourth.
- The circuit to be flown will be detailed at briefing.
- The first touch of the ground by the pilot's foot (PF) or the aircraft wheels (PL) is the point from which the pilot's score will be derived. When more than one PL wheel touches simultaneously the point chosen is the one in favour of the pilot.
- Zero score if the pilot or any part of the aircraft touches the ground outside the deck while undertaking the task.

Contestants will be awarded a zero landing score for:

- Engine not stopped before the gate.
- Gate not passed correctly.

- Falling over as a result of the landing.

Scoring

$$\text{Pilot score} = \text{Bto} + \left(250 \times \frac{\text{Dp}}{\text{Dmin}} \right)$$

Where

Bto = Pilot's takeoff score.

Dmin = x - the closest distance (cm) to the target achieved by any pilot

Dp = x - the pilot's distance to the target

The value of x, in metres will be given at briefing but may be between 10 and 25 metres depending on the meteorological conditions. This outer zone should be marked by cones or some other visual indication in the form of:

- A circle for PF1 and PF2 classes,
- Two 5m long lines parallel to the target for PL1 and PL2 classes.

Landing further than x metres from the target will result in a zero landing score.

C6 SHORT TAKE-OFF OVER A FENCE

Objective

To take off and clear a fence from as short a distance as possible. This task is intended to be included as a small element of another task.

Description

A fence 2m high and 10m long is manoeuvred into a position of pilot choice.

When takeoff permission is granted, pilots takes off and tries to fly over the fence. Maximum distance of pilot's feet on the ground to the fence is scored.

Special rules

- If the pilot's feet have not left the ground and the line of the fence is not reached at the first attempt then one second attempt is permitted.
- Zero fence score for breaking the fence or weaving.

Scoring

The scoring should be integrated into the overall task scoring as F. If the pilot fails to clear the fence then the penalty shall be no more than 10% of the overall task score.

$$\text{Pilot score} = \left(100 \times \frac{\text{Fmin}}{\text{Fp}} \right)$$

Where

Fmin = The shortest distance in metres for a takeoff over the fence

Fp = The pilot's takeoff distance to clear the fence.

Notes

A fence may simply be 2 kicking sticks with a plastic tape between.

To prevent unnecessary delay the fence should only be brought to the pilot when he is ready to take off.

The pilot should not be told the distance he is from the fence, the distance should be at the sole visual judgement of the pilot.

The distance measured is the maximum distance the pilot is away from the fence whilst touching the ground, thus if the pilot steps away from the fence during launch then this distance should be included.

The job of holding the two poles supporting the fence can be quite hazardous; it should be entrusted to marshals experienced in PF operations.

C7 PRECISION CIRCUIT IN THE SHORTEST TIME ('Clover leaf slalom')

Objective

To strike a number of targets laid out in a given order in the shortest possible time and return to the deck.

Description

4 pylons 2m in height are laid out

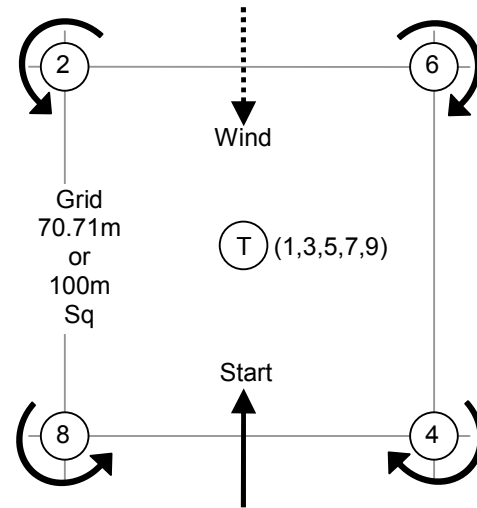
- At the corners of a 70.71m square for PF1 and PL1 classes.
- At the corners of a 100m square for PF2 and PL2 classes.

A fifth target is set at the centre of the square.

The pilot enters the course into wind and strikes the target T (strike 1). At this point the clock starts. The pilot flies around pylon 2 and returns to kick the stick T (strike 3), he then flies around pylon 4 and returns to kick the stick T (strike 5). This continues until all four pylons have been rounded. The clock stops when target T is kicked for the last time (strike 9).

Special rules

- A valid strike on the target T is one where the pilot or any part of the paramotor has been clearly observed to touch it. For class PL2 the target T may be replaced with a landing marker.
- To count as a strike, the pilot's body must be clearly seen to round each pylon and pylons 2 & 8 must be rounded in an ANTI CLOCKWISE direction and pylons 4 & 6 must be rounded in a CLOCKWISE direction.
- A strike on target 1 starts the clock, a strike on target 9 stops the clock.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.
- Failure to strike the first or last target or round at least one pylon or touch the ground at any point between them: score zero.
- The grid may be opened up to max. 100M at the briefing if the meteorological conditions dictate.



Scoring

N = number of targets

T = time from first to last target to tenths of a second if timed manually or hundredths if timed electronically.

Q = N^3 / T

Pq = $500 * Q / Q_{max}$

Ps = $500 - 30 * (T - T_{pmin})$. Minimum Ps = 0; if N < 9, Ps = 0.

P = Pq + Ps

C8 PRECISION CIRCUIT IN THE SHORTEST TIME ('Japanese slalom')

Objective

To strike a number of targets laid out in a given order in the shortest possible time and return to the deck.

Description

4 pylons 2m in height are laid out on

- On a 50 m x 50 m grid for PF1 and PL1 classes,
- On a 70,71 m x 70,71 m grid for PF2 and PL2 classes.

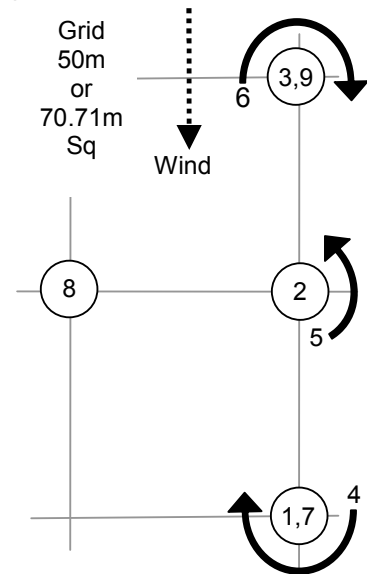
The pilot enters the course into wind and strikes target 1. At this point the clock starts. The pilot then strikes targets 2 and 3. He then returns to fly clockwise around target 1 (strike 4), anticlockwise around target 2 (strike 5) and clockwise around target 3 (strike 6). He then returns to strike target 1 (strike 7), target 4 (strike 8) and target 3 (strike 9). The clock stops when target 3 (strike 9) is kicked.

Special rules

- A valid strike on a target is one where the pilot or any part of the paramotor has been clearly observed to touch it
- When targets are acting as pylons, to count as a strike, the pilot's body must be clearly seen to round it, pylons 1 & 3 must be rounded in a CLOCKWISE direction and pylon 2 must be rounded in an ANTI CLOCKWISE direction.
- A strike on target 1 starts the clock, a strike on target 9 stops the clock.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.
- Failure to strike the first or last target or touch the ground at any point between them: score zero.

Scoring

- N = number of targets
T = time from first to last target to tenths of a second if timed manually or hundredths if timed electronically.
 $Q = N^3 / T$
 $Pq = 500 * Q / Qmax$
 $Ps = 500 - 30 * (T - T_{pmin})$. Minimum Ps = 0; if N < 9, Ps = 0.
P = Pq + Ps



C9 PRECISION CIRCUIT IN THE SHORTEST TIME ('Chinese slalom')

Objective

To strike a number of targets laid out in a given order in the shortest possible time and return to the deck.

Description

Between 6 and 12 targets are laid out on a course not exceeding 3Km in length. Targets are sticks. (landing markers for class PL2).

The pilot enters the course into wind and strikes target 1. At this point the clock starts.

The pilot then flies the course to strike all the other targets in the given order, a strike on the last one stops the clock.

Special rules

- A valid strike on a target is one where the pilot or any part of the paramotor has been clearly observed to touch it.
- A strike on target 1 starts the clock, a strike on the last target stops the clock.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.
- Failure to strike the first or last target or at least two of the intermediate targets or touch the ground at any point between them: score zero.

Scoring

- N = number of targets struck

N_{max} = number of targets
 T = time from first to last target to tenths of a second if timed manually or hundredths if timed electronically.
 Q = N^3 / T
 Pq = $500 * Q / Q_{max}$
 P_s = $500 - 30 * (T - T_{pmin})$. Minimum $P_s = 0$; if $N < N_{max}$, $P_s = 0$.
 P = $Pq + P_s$

Note to Director: This task is ideally suited for sites where there are physical features which obscure a direct view from one target to the next.

N1 NOISE IN CLIMB

Objective

From a stationary position on the ground in front of a line and using a fixed throttle (and propeller pitch) setting of pilot choice, the pilot takes off and climbs in a straight line over a microphone set 300m distant from the line. The max noise in dBA of the aircraft is measured.

Special rules

- Weaving, failure to fly directly over the microphone, changing throttle or propeller pitch setting: Zero score.

Scoring

$$\text{Pilot score} = 500 \times \left(\frac{nMin}{nP} \right)$$

Where:

$nMin$ = The minimum noise in dBA achieved in the class

nP = The noise achieved by the pilot in dBA

N2 MINIMUM NOISE IN LEVEL FLIGHT

Objective

To fly two legs of a course in opposite directions as quietly as possible.

Description

The course is between two points 300m apart and must be flown in a straight line at a height of 25ft (\pm 10ft). at a pilot selected constant throttle and propeller pitch setting. The microphone is positioned 100m offset from the centreline and equidistant from the two points.

Special rules

- Weaving, changing height, throttle or propeller pitch setting whilst in the course: Zero score for that run.

Scoring

$$\text{Pilot score} = \left(250 \times \left(\frac{nMin_1}{nP_1} \right) \right) + \left(250 \times \left(\frac{nMin_2}{nP_2} \right) \right)$$

Where:

$nMin_1$ and $nMin_2$ = The minimum noise in dBA achieved on each run in the class.

nP_1 and nP_2 = The noise achieved by the pilot in dBA on each run.