FAI Sporting Code

Fédération Aéronautique Internationale

Section 10 – Microlights and Paramotors

Annex 3
MODEL LOCAL REGULATIONS FOR CHAMPIONSHIPS

Annex 4
TASK CATALOGUE FOR CHAMPIONSHIPS

To Take Effect on 1st February 2012

Section 10 and General Section combined make up the complete Sporting Code for Microlights and Paramotors

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Annex 3 to SECTION 10

MODEL LOCAL REGULATIONS

FOR THE ….th
MICROLIGHT / PARAMOTOR CHAMPIONSHIPS

Place ..... Country..... Date ..……..

ORGANISED BY : .....

ON BEHALF OF THE FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

Organizer Address:

Tel:

FAX:

E-mail

Official Web Site

AUTHORITY

These Local Regulations combine the General Section and Section 10 of the FAI Sporting Code with regulations and requirements specific to this championship. The FAI Sporting Code shall take precedence over the Local Regulation wording if there is omission or ambiguity.

CLARIFICATION

Classes AL1, AL2, WL1 and WL2 are "Microlights" and classes PF1, PF2, PL1 and PL2 are “Paramotors”

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Annex 3, Part 1. Applies to all classes

1 PART FOR ALL CLASSES

1.1 GENERAL

The purpose of the championships is to provide good and satisfying contest to determine the champion in each class and to reinforce friendship amongst pilots and nations (S10 4.2).

1.2 PROGRAMME DATES

Training, aircraft inspection, registration: .....

Opening Ceremony: .....

First Competition briefing: .....

Contest Flying Days .....

Closing Ceremony, Prize-giving .....

1.3 OFFICIALS

Director .....

Deputy Director .....

Paramotor Director (if any) .....

International Jury : .....(President), ..., ...

Stewards : ....., ..., ...

(Give nationality of Jury and Stewards)

1.4 ENTRY

The Championships are open to all Active Member and Associate Member countries of FAI who may enter:

For Microlight championship ..... (put number) pilots plus one all-female crew in each class.

For Paramotor championship ..... (put number) pilots plus one wheelchair bound pilot in class PL1.

- Entries must be made on the official Entry Form.
- If applications, with fees paid, are not received by .....*(date)*, the entry may be refused.
- The entry fee is:

..... *(currency & value)* for pilot in each class except *(write the exception if any)*

..... *(currency & value)* for each co-pilot (navigator)

..... *(currency & value)* for each Team Leaders and accompanying persons.

..... *(currency & value)* Other *(if any)*.

The entry fee includes: *(add or delete as appropriate)*:

- Competition operations (setting, controlling and evaluating the tasks)
- All competition materials (maps, task descriptions, control point atlases, etc.)
- Free use of the airport and free entry to all official events.
- Camping place for each team with water, electricity and one tent
- Preferential prices to eat

The entry fee is to be transferred before ..... *(date)* to .....*(Bank details)*

1.5 INSURANCE

Third party insurance of minimum ..... *(currency & value)* is obligatory. Personal accident insurance for team members and insurance against damage to aircraft are highly recommended. Documentary proof of insurance as specified on the Entry Form must be presented to the Organizers at Registration. (GS. 3.9.6)

1.6 LANGUAGE

The official language of the Championships is English.

1.7 MEDALS AND PRIZES

FAI medals will be awarded to:

- Pilots placed first, second and third in each class (including PF1f if in compliance with S10 4.3.2).
- National teams placed first, second and third.
- FAI Diplomas will be awarded for those placed first to tenth.

Other trophies *(if any)* will be also awarded for ..... *(describe)*.

1.8 CHAMPIONSHIP CLASSES

The Championships may be held in the following classes (S10 1.5):

WL1, WL2, AL1, AL2, GL1, GL2, PF1m + PF1f, PF2, PL1 and PL2

Each class is a championship in its own right and as far as possible interference of one class by another shall be avoided.

1.8.1 CLASS VIABILITY

For a championship to be valid there must be competitors from no less than 4 countries in a class, ready to fly the first task, and must start a minimum of one task. (S10 4.3.2)

1.8.2 CHAMPIONSHIP VALIDITY

The title of Champion in any class shall be awarded only if there have been at least 6 separate tasks.

1.9 GENERAL COMPETITION RULES

1.9.1 REGISTRATION

On arrival the team leader and members shall report to the Registration Office to have their documents checked and to receive supplementary regulations and information. The following documents are required:

- Pilot License and qualifications.
- Evidence of competitor's nationality.
- Valid FAI Sporting License for pilot and navigator.
- Aircraft Certificate of Airworthiness or Permit to Fly.
- Minimum speed declaration (not required for Paramotors or foot-launched Microlights).
- Evidence of conformity to class rules.
- Certificate of Insurance.
- Receipt for payment of entry fees.

The Registration Office will be open as indicated on the information board.

Registration forms may be inspected by Team Leaders on request prior to the start of competition flying.

1.9.2 PILOT AND NAVIGATOR QUALIFICATIONS

A competing pilot shall be of sufficient standard to meet the demands of an international competition and hold a valid pilot license or equivalent certificate. Both pilot and navigator must hold an FAI Sporting License issued by his own NAC. The navigator must have reached the age of 14 years.

1.9.3 AIRCRAFT AND ASSOCIATED EQUIPMENT

Aircraft and equipment provided by the competitor must be of a performance and standard suitable for the event.

Each aircraft must possess a valid Certificate of Airworthiness or Permit to Fly not excluding competition flying. This document must be issued in or accepted by the country of origin of the aircraft or the country entering it or the country of the organisers. The aircraft must comply with the FAI definition of a Microlight or Paramotor at all times (S10 1.3).

The aircraft shall fly throughout the championships as a single structural entity using the same set of components as used on the first day except that propellers may be changed provided that the weight limit is not exceeded and the Certificate of Airworthiness or Permit to Fly is not invalidated. (S10 4.17.4)

All aircraft must be made available during the Registration period for an acceptance check in the configuration in which they will be flown. The organisers have the right to inspect for class conformity and airworthiness and, if necessary, ground any aircraft for safety reasons at any time during the event.

All aircraft must be equipped with a simple method of sealing the fuel tank.

1.9.4 TEAM LEADER RESPONSIBILITIES

The team leader is the liaison between the organisers and his team. He is responsible for the proper conduct of his team members, for ensuring that they do not fly if ill or suffering from any disability which might endanger the safety of others and that they have read and understand the rules.

1.9.5 STATUS OF RULES AND REGULATIONS

Once competition flying on the first day has started:

- No rules or regulations may be changed. Any additional requirements within the rules needed during the event will not be retrospective. (S10 4.9.4).
- Competitors may not be substituted, change to another class nor change their aircraft.

1.9.6 PRACTICE & REST DAYS

An official practice period of not less than 2 and not more than 5 days immediately preceding the opening of the Championships shall be made available to all competitors. All the infrastructure for the competition (camping, maps, offices, scoring...) shall be ready for the first day of the official practice period. If practicable, on at least one practice day a task should be flown under competition conditions to test the integrity of the organisation. The scores thus generated shall not be counted. (S10 4.7.3)

Rest days will only be held on account of bad weather or unforeseen emergency.

1.9.7 COMPLAINTS

A competitor who is dissatisfied on any matter may, through his team leader, make a complaint in writing to the Director.

Complaints shall be made, and dealt with, without delay but in any case must be presented not later than 6 hours after the respective Provisional Score sheet has been published, not counting the time between 22:00 and 07:00, except for the tasks of the last competition day, or for Provisional Score sheets published on or after the last competition day, when the time limit is 2 hours.

A complaint that could affect a task result must be dealt with and answered in writing before any official score sheet is issued. All complaints and their responses must be published on the official notice board. (S10 4.36)

1.9.8 PROTESTS

If the competitor is dissatisfied with the decision about its Complaint, the Team Leader may make a protest to the Director in writing and accompanied by the protest fee of ..... *(currency & value)*. The fee is returnable if the protest is upheld or withdrawn before the start of the proceedings. A protest may be made only against a decision of the Championship Director.

A protest must be presented not later than 6 hours after the respective Official score sheet has been published, except for the tasks of the last competition day, or for Official Score sheets published on or after the last competition day, when the time limit is 2 hours. The night time between 22:00 and 07:00 is never included. (S10 4.36)

1.10 FLYING AND SAFETY REGULATIONS

1.10.1 BRIEFING

Briefings will be held for team leaders and/or competitors on each flying day. The time and place for briefing meetings and any postponements will be prominently displayed.

All briefings will be in English and be recorded in notes, by tape recorder or video. A Full task description, meterological information, flight safety requirements, penalties and details of any prohibited or restricted flying areas will be given in writing, as a minimum, to team leaders, Jury members and Stewards. (S10 4.21)

Procedures for flight preparation, takeoff, flying the task, landing and scoring together with any penalties will be specified in each task description. (S10 4.21)

Flight safety requirements given at briefing carry the status of regulations. (S10 4.21)

Team Leaders' meetings, in addition to briefings, may be called by the Director, but shall be held within 18 hours if requested by five or more team leaders. (S10 4.22)

1.10.2 COMPLIANCE WITH THE LAW

Each competitor is required to conform to the laws and to the rules of the air of the country in which the championships are held. (S10 4.23.1)

1.10.3 PREPARATION FOR FLIGHT

Each aircraft shall be given a pre-flight check by its pilot and may not be flown unless it is serviceable. (S10 4.23.3)

1.10.4 FLIGHT LIMITATIONS

Each aircraft shall be flown within the limitations of its Certificate of Airworthiness or Permit to Fly. Any manoeuvre hazardous to other competitors or the public shall be avoided. Unauthorised aerobatics are prohibited. (S10 4.23.2)

1.10.5 DAMAGE TO A COMPETING AIRCRAFT

Any damage shall be reported to the organisers without delay and the aircraft may then be repaired. Any replacement parts must be replaced by an identical part, except that major parts such as a wing for a paraglider controlled aircraft may be replaced by a similar model or one of lesser performance. Note. Change of major parts may incur a penalty. (S10 4.23.4)

An aircraft may be replaced by permission of the Director if damage has resulted through no fault of the pilot. Replacement may be only by an identical make or model or by an aircraft of similar or lower performance and eligible to fly in the same class.(S10 4.23.5)

1.10.6 TEST AND OTHER FLYING

No competitor may take-off on a competition day from the contest site without the permission of the Director. Permission may be given for a test flight but if the task for that class has started the pilot must land and make a competition take-off on the task. Practising prior to a task is not permitted. (S10 4.25)

1.10.7 FITNESS

- A pilot may not fly unless fit. Any injury, drugs or medication taken, which might affect the pilot's performance in the air, must be reported to the Director before flying.
- Every nation has the full responsibility to fight against doping. Anti doping control may be undertaken on any competitor at any time.
- The decision to impose anti doping controls may be taken by the FAI, the organiser or the organiser's national authority.
- All relevant information can be found on the FAI Web site: www.fai.org/medical

1.10.8 AIRFIELD DISCIPLINE

Marshalling signals and circuit and landing patterns will be given at briefing and must be complied with. Non compliance will be penalised.

1.10.9 COLLISION AVOIDANCE

A proper look-out must be kept at all times. An aircraft joining another in a thermal shall circle in the same direction as that established by the first regardless of height separation.

A competitor involved in collision in the air must not continue the flight if the structural integrity of the aircraft is in doubt. (S10 4.24.5)

1.10.10 CLOUD FLYING

Cloud flying is prohibited and aircraft shall not carry gyro instruments or other equipment permitting flight without visual reference to the ground. (S10 4.24.6)

1.10.11 ELECTRONIC EQUIPMENT

CIMA approved GNSS flight recorders and ELT's without voice transmission capability are permitted and may be carried. Sealed mobile phones, switched off, may be carried for use after landing or in an emergency, the director must be immediately informed if the seal is broken.

Unless otherwise briefed, then in the period between entering quarantine before flying a task and leaving quarantine after flying a task only materials issued by the organizer, mathematical calculators without any capability for any data transfer, and clocks may be used for preflight preparation and flight control. No other electronic devices with real or potential communication and/or navigation capabilities shall be available to, or accessed by the pilot or crew. (S10 4.27)

All other electronic devices with real or potential communication or navigation capabilities must be declared and approved for carriage by the Championship Director.

A document describing the device will be signed by the competitor when it is being sealed, and the document will be retained by the organization. After the task, provided the seal is not broken, documents will be returned to each competitor when he comes to unseal the device. If a document is still in the possession of the organization at the time of issuing the scores, the competitor will get a 100% task penalty.

Before each task the Director will ask marshals to check for infringements. The penalty is disqualification from the competition.

1.10.12 EXTERNAL AID TO COMPETITORS

Any help in navigation or thermal location by non-competing aircraft, including a competing aircraft not carrying out the task of their own class is prohibited. This is to ensure as far as possible that the competition is between individual competitors neither helped nor controlled by external aids. (S10 4.26)

1.11 CHAMPIONSHIP TASKS

1.11.1 GENERAL

To count as a valid championship task all competitors in the class concerned will be given the opportunity to have at least one contest flight with time to carry out the task.

A task for each class may be different and a task may be set for all classes. (S10 4.29.5)

A competitor will generally be allowed only one take-off for each task and the task may be flown once only. A competitor may return to the airfield within 5 minutes of take-off for safety reasons or in the event of a GNSS flight recorder failure. In this case a further start may in principle be made without penalty but equally the competitor must not benefit in any way from restarting. Exceptions and penalties will be specified in the Task Description. (S10 4.30)

Precision tasks may be combined with other tasks or set separately.

1.11.2 TASK PERIOD

Times for take-off, closing of take-off windows, turn points and last landing will be displayed in writing. If the start is delayed, given times will be correspondingly delayed unless specifically briefed to the contrary.

1.11.3 TASK SUSPENSION OR CANCELLATION

The Director may suspend flying after take-offs have started, if to continue is dangerous. If the period of suspension is sufficiently long to give an unfair advantage to any competitor, the task shall be cancelled. Once all competitors in a class have taken off or had the opportunity to do so, the task will not be cancelled except for reasons of force majeure. (S10 4.30)

1.11.4 TYPES OF TASKS

Only tasks approved by CIMA or listed in S10 A4 will be used:

A Flight planning, navigation estimated time and speed. No fuel limitation.

B Fuel economy, speed range, duration, with limited fuel.

C Precision

A catalogue of tasks (and their scoring systems) to be implemented during the championship is attached to these local regulations.

1.11.5 FLYING THE TASKS

Any part of a competition task may be flown either

a along a set course in the direction specified at the briefing,

b along an in flight decided course in the direction selected by the pilot,

c according to a local pattern specified at the briefing.

The resulting complete task is the combination of the above.

Order of take off may be

- a scheduled take off order, balloted by the Organiser,
- open window,
- current championship or reverse championship order

The actual scheduled take off order is annexed to the relevant Task Description.

If a touch and go is required in order to separate parts of a task, details will be given in the Task Description and at the briefing.

1.11.6 OUTLANDINGS

Outlandings shall be scored zero, unless specifically stated at the briefing. If a pilot lands away from the goal field or from base he must inform the organisers by telephone, with the minimum of delay and at the latest by the closing time of the task. He may break the fuel tank seal and fly home or return by road.

Evidence of the landing place must be obtained from GNSS flight recorder evidence. On return to base he must go immediately to Control with his evidence. Failure to follow this procedure without good reason may result in the pilot not being scored for the task, or charged for any rescue services which have been called out, or disqualification. (S10 4.32)

1.11.7 FLIGHT BOUNDARIES

Flights terminating beyond the boundaries of the organiser's country shall score only to the point where a straight line between the start point or last turn point and the landing place last cuts the boundary, unless permission is given at briefing to cross such boundaries. (S10 4.33)

1.11.8 EMERGENCIES

A competitor landing to help an injured pilot shall not, at the discretion of the Director, be disadvantaged by this action.

1.11.9 THE SECURE AREA

This is a clearly marked area where the aircraft must be placed from time to time as instructed by the director. Once in the Secure Area and without the expressed permission of the director, no aircraft may be touched for any reason other than to remove it from the Secure Area. Competitors who do not respect the rules of the Secure Area may be liable to penalty.

1.11.10 QUARANTINE

This is a clearly marked area to which aircraft and crew must go from time to time as instructed by the director, usually for the purposes of scoring, fuel measurement and scrutineering of fuel tank seals, fuel systems, telephone seals etc. Once in the Quarantine and without the expressed permission of the Quarantine Marshal, the crew may not communicate with anyone else and may not modyfy or otherwise change the configuration of their aircraft and items carried. Competitors who do not respect the rules of the Quarantine area may be liable to penalty.

1.12 CONTROL OF TASK FLIGHTS.

1.12.1 TIMING

All times are given, taken and calculated in local time or simple elapsed time, rounded down to the most accurate permitted precision. (S10 5.2.6 and 5.2.7)

1.12.2 FUELLING

Fuel will be measured by weight or volume but will be consistent for any given refuelling session. Measured fuel quantities include oil where it is mixed with petrol. Fuel measured by volume shall be within ± 10℃ o f the ambient temperature.

Refuelling will be in the order and in accordance with the instructions given at briefing. Failure of the aircraft to be present on time may result in penalty for the pilot.

An official observer, or a team leader or competitor from a rival team must control fuelling.

Official observers will collect documentary evidence that all competitor's fuel systems are sealed immediately after fuelling, and that all competitor's fuel systems seals have been inspected after landing. Sealing of tanks is optional if aircraft are moved under supervision of officials directly to the take off place.

If there is no separate class for aircraft with electric engines there shall be no fuel limit for them in any task. (S10 4.17.9)

1.12.3 ACCURACY

Landing accuracy will be verified by video cameras.

1.12.4 GATES, TURNPOINTS AND MARKERS

Gates are normally a straight line 250m wide perpendicular to the briefed track.

Gates may be:

- Known gates. Their position and height to be crossed will be briefed.
- Hidden gates. The height to be kept along the sections of the course where they are situated will be briefed.

Proof of passing a gate and it's timing will be by Marshals report or GNSS flight recorder evidence, as briefed.

Control points may be: A geographical point, a ground marker, a landing marker or a kicking stick.

Control points may be:

- Known control (turn) points. Their position and description will be briefed.
- Hidden control points. The track along which they will be found and their description will be briefed.

Proof of reaching a control point may be:

- by the competitor recording the symbol and position on the declaration sheet.
- by a Marshal's report.
- by flight recorder evidence.

The precise requirements will be described in the Task Description.

1.13 GNSS FLIGHT RECORDERS

1.13.1 The status of GNSS flight recorder evidence relative to other forms of evidence is as follows:

- All aircraft shall carry a FR which will be used as primary evidence.
- In the event of a failure of the primary FR, a second FR or observer's report may be used as secondary evidence.

1.13.2 Only CIMA approved FRs may be used and they must be operated in strict accordance with their approval documents. (S10 A6)

1.13.3 The FR to be used by a pilot in a championship will be supplied by the pilot. The FR case must be clearly labelled with the pilots name and competition number and (if applicable) this information must be entered into the memory of the FR.

1.13.4 The pilot must make a data transfer cable and a copy of the transfer software available to the organization if required.

Before the championship starts, each FR must be presented together with its CIMA approval document to the organization for inspection and recording of type and serial number. The pilot must be sure it fully complies with any requirements in the approval document e.g. that manufacturer's seals are intact and it is equipped with a data-port sealing device if it is required or it will be rejected by the organization.

Once the championship has started the pilot must always use the same FR. In the event of a permanent failure, another FR may be used after it has been presented together with its CIMA approval document to the organization for inspection and recording of type and serial number.

All FR's must be presented to the organization for inspection immediately before the start of each task. If secondary evidence is presented then both sets must be clearly marked 1 and 2. Only one set of evidence will be used to verify the flight.

1.13.5 It is the pilots responsibility to ensure that he is fully aware of the functions and capabilities of his FR eg. that it has sufficient battery power and that the antenna is correctly positioned etc.

1.13.6 Where FR data is to be used for scoring, the organizer must have visited every location which could affect the scoring and got a GNSS fix of that position. E.g. turnpoints, hidden gates etc. It is not acceptable to extract positions from a map in any circumstances. Points that will not require FR evidence for scoring (eg. because a marshal will be taking times at a hidden gate) must be specifically briefed.

1.13.7 The scoring zone for FR's is independent of any other zone or sector (eg. one with ground observers). A scoring zone will normally be a cylinder of 200 m radius and of infinite height.

To score, a track fix point must either be within this circle, or the line connecting two sequential track fixes must pass through the circle. Additionally the task may require one of these fixes to be associated with a pilot event mark (PEV).

Complaints about the physical mis-positioning of a scoring zone relative to a turnpoint will not be accepted unless it can be shown that the physical position of the location is outside a circle of radius R= Rp/2 where Rp= Radius or size of the scoring zone defined by the organizers *(ie the physical location must lie inside an inner circle half the width of a gate or radius of a scoring zone).*

1.13.8 Gate or point time is taken from the fix immediately before it is crossed.

1.14 SCORING

1.14.1 GENERAL

The overall results will be computed from the sum of the task scores for each competitor, the winner having the highest total score in the class. (S10 4.34.10)

A score given to a competitor shall be expressed to the nearest whole number, 0.5 being rounded up. (S10 4.34.13)

All distances not obtained from GNSS shall be calculated from the official map and rounded up to the next 0.5 km. (S10 4.34.14)

A pilot who did not fly scores zero and will be marked DNF or "Did Not Fly" on the score sheet. A pilot who is disqualified scores zero and will be marked DSQ or "Disqualified". (S10 4.34.15)

Deduction of penalty points shall be made after scoring for that task is completed. (S10 4.34.16)

If a pilot's score is for any reason negative including penalties his score for the task shall be taken as zero. Negative scores shall not be carried forward. (S10 4.34.18)

The following standard symbols will be used for scoring:

V = Speed, D = Distance, T = Time

The scoring system to be used shall be approved by the FAI Microlight Commission and attached to the Local regulations.

Score sheets shall state the date for the task and the date and the time when the score sheet was issued, the task number, classes involved, competitors name, country, competition number and score.

Score sheets shall be marked Provisional, and Official, or if a protest is involved, Final. A Provisional score sheet shall only become Official after all complaints have been answered by the Director. Scores shall not be altered when the Provisional sheet is made Official. (S10 4.34.3)

If a failure in GNSS flight analysis or scoring is discovered before the end of the championship and the failure is due to a technical error which emanates from the equipment being used for the GNSS flight analysis or scoring, this failure must be corrected regardless of time limits for complaints and protests. (S10 4.34.19)

1.14.2 PENALTIES

In general, any infringement of any flying, safety or task regulation will result in penalty.

Actions which will normally result in disqualification:

a. Bringing the event, its organisers, the FAI or the sporting code into disrepute.

b. The use of banned substances.

c. Unauthorised interference with an aircraft in a Secure Area.

d. Flight outside the specified flight envelope of the aircraft or dangerous flying.

e. Flight or attempted flight with prohibited equipment.

f. Unauthorised assistance during a task.

g. Interference with the firmware or software of a CIMA approved GNSS flight recorder

Annex 3, Part 2. Applies to Microlights

2.1 GENERAL REMARKS

2.1.1 RANGE

All aircraft will be expected to have a still air range of 250 km.

2.1.2 TAKE-OFF AND LANDING

Unless it is stated differently in the task description all competition take-offs and landings must be completed within the marked deck. The penalty for failing to take off or land entirely within the deck will be 20% - 50% of pilot score, as briefed.

2.1.3 CONTROL OF CLASS CONFORMITY:

2.1.3.1 Weighing equipment shall be made available to competitors during the practice period. All aircraft may be weighed again at any time in the championships. The take-off weight is the weight of the aircraft ready to fly including pilot(s), fuel, and any supplementary equipment. The take-off weight must not exceed the FAI definition of a Microlight for the class in which it is flown.

2.1.3.2 Any competitor attempting to start a task overweight will be disqualified from that task.

2.1.4 CONTEST NUMBERS

The numbers or letters supplied by the organisers shall be displayed on a suitable space on the underside of the wing with their top towards the leading edge The underside wing number shall be of a colour contrasting to the background. Identification may also be required on other parts of each Microlight (e.g. fin, cockpit side or pilot's helmet).

2.1.5 PROTECTIVE EQUIPMENT

A protective helmet must be worn on all flights unless this restricts vision from within an enclosed cockpit canopy with supine seating. An emergency parachute system is highly recommended. (S10 4.24.1)

2.2 FLIGHT CONTROL

2.2.1 FUEL

Prior to fuelling for economy tasks, competitors must be able to demonstrate that their aircraft tanks are empty and that the engine cannot run in either the ground or in-flight attitude of the Microlight. The engine will then be run for 60 seconds to ensure all systems are free of air. Where possible, this process will take place immediately prior to the task to enable engines to be warmed up. When tanks are required to be sealed before a task the penalty for returning to the quarantine area with a broken or a missing seal will be 100% of the pilot score.

2.2.2 DISTANCE MEASUREMENTS

Distance will be measured for all competitors on the same official map of a scale of 1:250,000. Measurement will be made to the nearest 0.5 km.

2.2.3 KNOWN GATES

When competitors prior to take off are informed of the location of a timing gate, the approach to that gate may be between 500 and 1000 feet height and in a straight line for the final 1 km. Any deviation from this approach may incur a penalty.

2.3 SCORING

2.3.1 The total value of tasks flown in each class during the championships must as far as possible be very close to:

A Tasks for flight planning, navigation, etc with no fuel limit: 50% of the total value of the tasks flown.

B Tasks for fuel economy, speed, duration, etc with limited fuel: 20% of the total value of the tasks.

C Precision tasks: 30% of the total value of the tasks flown.

2.3.2 The winner of each class shall be the pilot or crew gaining the highest total points in the class. (S10 4.34.10)

2.3.3 The team prize shall be computed from the sum of the scores of the top three pilots from each country in each class in each task. The task score for which a pilot was disqualified shall not count for team scoring. Other valid tasks flown by this pilot are not affected. (S10 4.34.11)

2.3.4 CROSS COUNTRY TASKS

The maximum score will be between 500 and 1500 points per task.

2.3.5 PRECISION TASKS

The scoring formula for each precision task is to be found in A4, the task catalogue.

2.4 GENERIC TASKS

2.4.1 FLIGHT PLANNING, NAVIGATION TASKS

2.4.1.1 OBJECTIVES

The objectives of a flight planning navigation task include testing the competitors' ability to:

- Plan a flight from information provided.
- Follow an accurate course in the prevailing conditions.
- Maintain a given or predicted ground speed.

2.4.1.2 SUMMARY

Competitors are required to fly accurately along a course provided by means of:

- A straight line, an arc, a circle, a polygon, an irregular line or any combination of these drawn on a map.
- A line with beginning and end points marked on a map or provided as map references with geometric instructions specifying the line between them.
- A line start point marked on the map or provided as a map reference with geometric instructions specifying the route to be followed.
- A start point located on the ground with a true or magnetic heading or geometric instructions specifying the route to be followed.

The task may consist of one or several legs, each using any of the above. In addition competitors may be required to fly all or part of the course at a given or predicted ground speed.

2.4.1.3 EVIDENCE

Evidence of the accuracy with which the competitors have flown may be provided by means of:

- Marks made by competitors on a map indicating the location of on-track ground features identified from photographs provided.
- Successful navigation by competitors to the next waypoint or turnpoint.
- Marshals observing and recording the time that aircraft pass through on-track gates or pass over waypoints or turnpoints.
- A GNSS record of the flight.

Competitors may be required to provide a pre-flight declaration which may include:

- A list of waypoints or turnpoints to be visited.
- The order in which waypoints or turnpoints are to be visited.
- The time a waypoints or turnpoints is to be visited.
- The predicted groundspeed over any part or parts of the course.

2.4.2 FUEL ECONOMY, SPEED RANGE, DURATION TASKS

2.4.2.1 OBJECTIVES

The objectives of a fuel economy task include testing the competitors' ability to:

- Maximise aircraft fuel performance.
- Predict aircraft fuel consumption.
- Use prevailing weather conditions to supplement fuel.

2.4.2.2 SUMMARY

Competitors are required to fuel their aircraft with a measured volume or weight of fuel, or with the amount of fuel they predict they will need to fly a given task in the prevailing conditions, to seal their fuel tanks and then:

- Fly as far as possible before landing at a designated landing area.
- Fly for as long as possible before landing at a designated landing area.
- Fly a multi-leg task in which each leg may have different performance objectives.
- Fly a planned task before landing in a designated landing area.

Or any combination of these. Competitors may be permitted to fly to empty tanks or may be required to return with a specified safety quantity of fuel.

2.4.2.3 EVIDENCE

Evidence of competitors' performance may be provided by means of:

- Marks made by competitors on a map indicating the location of ground features identified from photographs provided to prove distance travelled.
- Marshals observing and recording the time that aircraft pass through gates on or off the airfield to prove distance or time travelled.
- A GNSS record of the flight.

Evidence of fuel consumption may be provided by:

- Verifying that the competitors' fuel tanks and systems are empty before fuelling.
- Measuring the fuel with which the tank is filled.
- Sealing the fuel tank before the flight.
- Verifying after the flight that seals on the fuel tank are intact.

2.4.3 PRECISION TASKS

2.4.3.1 OBJECTIVES

The objectives of a precision task involve testing the competitors' ability to handle their aircraft, where possible in circumstances similar to those that may be encountered during normal or emergency flying activity.

2.4.3.2 SUMMARY

Competitors are required to demonstrate:

- Normal takeoffs.
- Short takeoffs.
- Powered landings.
- Engine-off landings.
- Short landings.

2.4.3.3 EVIDENCE

Evidence of competitors' skill may be provided by means of:

- Observation recorded by marshals with reference to marks or measurements on or near the ground.
- Tapes, ribbons, balloons or other items that may be cut or broken by an aircraft without causing damage to the aircraft or injury to the crew or observers.
- Electrical or electronic equipment that records the passage of the aircraft using a pressure detector, photo cell or similar device.

2.4.4 COMPOSITE OR SEQUENTIAL TASKS

2.4.4.1 OBJECTIVES

The objective of a composite task, which may combine any of the above, is to make the competition more demanding and more interesting for the competitors. The objective of a sequential task, in which any of the above tasks may follow another without a break, is to enable a competition director to run two tasks in a shorter time than would otherwise be possible.

2.4.4.2 SUMMARY

Composite tasks may combine any or all of the navigation, economy & precision tasks, although such tasks must be carefully designed in order to ensure that one aspect of the task does not compromise another. For example, precision tasks may usefully be combined sequentially with navigation or economy or other precision tasks. Care must be taken to ensure that a problem in the first task does not invalidate the next task in sequence. A timed economy task that ends with an engine off precision landing may be compromised by congestion around the landing deck.

Annex 3, Part 3. Applies to Paramotors

3.1 GENERAL REMARKS

3.1.1 RANGE

All aircraft will be expected to have a still air range of 100 km.

3.1.2 THE SECURE AREA

Is a clearly marked area where aircraft must be placed from time to time as instructed by the director. Once in the Secure Area and without the express permission of the director, no aircraft may be touched for any reason other than to remove it from the Secure Area.

Competitors who do not respect the rules of the Secure Area may be liable to penalty.

3.1.3 A "CLEAN" TAKE OFF

Is defined as a take off attempt in which the canopy does not touch the ground between the moment it first leaves the ground and the moment ten seconds after the entire aircraft including the pilot is airborne.

3.1.4 THE LANDING DECK

- A landing deck is a clearly marked area defined at the briefing. A minimum of 100m x 100m is required.
- There will be one landing deck provided for every 30 competitors.
- A landing deck will have a windsock within 100m of its boundary.
- There will be no significant obstacles within 200m of the boundary of a landing deck.
- Unless otherwise briefed, penalties will be awarded to Pilots or any part of their aircraft touching the ground anywhere outside the landing deck during a task.

3.1.5 CONTEST NUMBERS

Aircraft shall carry the number centrally on the underside of the paraglider, top towards the leading edge.

3.1.6 EMERGENCY EQUIPMENT

An emergency parachute is not to be considered as a part of the structural entity of an aircraft.

3.1.7 PROTECTIVE EQUIPMENT

A protective helmet must be worn whenever the pilot is strapped into the harness of an aircraft. An emergency parachute system is mandatory.

3.1.8 PROHIBITED EQUIPMENT

In addition to those items detailed in Part 1 of the local regulations: Disposable ballast & binoculars.

3.2 FLIGHT CONTROL

3.2.1 TIMINGS

Normally, take-off times are taken at the moment a pilot's feet leave the ground.

Normally, landing times are taken at the moment a pilot's feet or any other part of the pilot or aircraft touch the ground.

Timings may also be taken when the pilot kicks a stick or flies overhead an observer as briefed for the task in question.

A task is deemed to have started the moment the first pilot to take-off is ready to take-off and ends the moment the last pilot has landed and has exited the landing deck.

In the case of a take-off time window, the precise time of take-off is entirely at the discretion of the pilot but shall be within the overall time window. In the case where a particular take-off time is given, the clock will start running at that moment and the pilot may subsequently take-off at any time.

3.2.2 DISTANCE MEASUREMENT

Distance will be measured for all competitors on the same official map, of a scale not smaller than 1:100,000. Measurement will be made to the nearest 0.5 km.

3.2.3 FUEL MEASUREMENT

Fuel will be measured by weight or volume but will be consistent for any given refuelling session. Refuelling will be in the order and in accordance with the instructions given at briefing. Failure of the aircraft to be present on time may result in penalty for the pilot.

Competitors must be able to demonstrate that their entire fuel system is empty.

3.2.4 FLIGHT ACCURACY MEASUREMENT

Ground markers

- Certain ground markers may be designated as "Landing markers", where a bonus score may be available in the task for landing on the marker. Landing markers are min. 4m x 4m.

Kick sticks

- Some tasks may involve the use of "Kicking sticks". A valid strike on a stick is one where the pilot or any part of the aircraft has been clearly observed to touch it OR when electronic ‘kick stick’ sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.
- The stick should be approx. 2m in height, visible from a range of at least 250 meters, and of a construction such that it is unlikely to enter a propeller once struck.
- One or more sticks may be used in a task for the purposes of separating elements of that task (e.g. to take a time) and a bonus score may be available for successfully kicking a sequence of sticks in a given order and/or time.

3.3 FLYING THE TASKS

3.3.1 PROPORTIONS

The proportion of the tasks accumulated during the championship is approximately A: B:C = 1/3:1/3:1/3

3.3.2 ASSISTANTS

3.3.2.1 GENERAL

Help from assistants is positively encouraged until a competitor enters the deck to start a task. From that moment onwards, all external assistance is forbidden except from marshals or those people expressly appointed by the Director, until the moment the competitor leaves the deck having finished a task, or otherwise lands according to the outlanding rules.

3.3.2.2 PL1 WHEEL-CHAIRED DISABLED PILOT

A disabled pilot flying in PL1 class may be assisted in pre-launch preparation by one authorized person. Once the pilot is ready to launch, the assistant shall report that fact to the marshal, and will not help any more in the launch procedure. Either holding any part of Paramotor or wing canopy, or giving information about a canopy inflation is considered as a help.

3.3.3 TAKE-OFF

In all tasks A PF must be foot launched and a PL must take off on its wheels.

No pilot may take-off without permission from the Director or a Marshal.

Open window or given order of take off may be applied to tasks.

All take-offs, unless otherwise briefed, must be effected entirely within the landing deck, except for emergency provisions given at briefing. Failure to comply will result in a penalty of 20% of the pilot's score.

Before departure, a pilot and/or his aircraft may be inspected at any time for contravention of any regulations. It is the duty of competitors to assist marshals as much as possible in expediting an inspection.

Except in specified tasks, an aborted take-off does not in principle attract any penalty, however the pilot must comply with any instruction from the marshals to expedite a re-launch or the pilot risks being relegated to the end of the queue.

In the case where the take-off order is given:

- No more than six pilots are permitted on a take off deck at any one time.
- The first 6 pilots must be ready to takeoff at the start of the task.
- Every pilot must take off before the sixth pilot in order after him has taken off or a 20% penalty will apply.
- If a marshal considers a pilot to be causing unreasonable delay (has been on the deck more than 20 minutes with the opportunity to take off), a 20% penalty will apply.

In the case where a particular take-off time is given, the clock will start running at that moment and the pilot may subsequently take-off at any time.

3.3.4 FLIGHT LIMITATIONS

Aerobatics and manoeuvres such as stalls, B-line stalls, deep stalls and spins are prohibited. 'Big ears' is accepted.

3.3.5 LANDING

All landings, unless otherwise briefed, must be effected entirely within the landing deck, except for emergency provisions given at briefing. Failure to comply will result in a penalty of 20% of the pilot's score. The pilot may be

liable to penalty if he or any part of his aircraft touches the ground outside the deck before he has removed his harness.

- Upon landing, pilots must immediately remove their aircraft from the deck.
- Landings outside the landing deck but within the airfield boundary will attract a 20% penalty.
- Pilots 'abandoning' their aircraft on the landing deck will be liable to penalty.

In tasks where pilots are asked to make a precision landing or to land on a marker:

In PF: The objective is for the pilot to make a good landing on his own two feet without falling over. "Falling over as a result of the landing" will be interpreted as:

- GOOD: If the pilot falls to ONE knee - landing score as achieved.
- BAD: If the pilot falls to TWO knees OR if any part of the power unit touches the ground during the landing process - zero landing score.

In PL: The objective is for the pilot to make a good landing after which the aircraft comes to rest the right way up and without any damage. Zero landing score if the aircraft comes to rest off all its wheels or is structurally damaged in any way, although failure to restart the engine will not incur a penalty.

In tasks where the pilot is asked to switch off his engine above specific heights, the heights will be determined by:

- 500 Ft: "The engine must be stopped & propeller stationary for a minimum period of 60 seconds before any part of the aircraft or the pilot touches the ground."
- 15 ft: "The engine must be stopped & propeller stationary for a minimum period of 2 seconds before any part of the aircraft or the pilot touches the ground."

Obstruction at landing markers: If a pilot or any part of his aircraft obstructs the attempted landing or the takeoff of another competitor at a landing marker then a 20% penalty will apply. However, any pilot who scores more than zero for his landing at a landing marker has exclusive use of the area immediately surrounding the marker for a maximum period of one minute in which to clear his aircraft from the area.

3.3.6 EMERGENCIES

All pilots must fold up their canopies immediately upon landing. A canopy that has not been folded within three minutes indicates the pilot is in need of help. Any pilot who observes such a situation is obliged to render assistance and contact the organization as soon as possible.

3.4 SCORING

3.4.1 ALL TASKS

The maximum score may be up to 1000 points per task and is generally calculated as follows:

P = Q/Qmax x 1000

Where: Q = pilot scores, Q max = best score for the task, P = Total score

but, depending on the task, absolute scores for pilots' performance may also be awarded either in combination with the above or exclusively. Where a combination is used the total available absolute score shall not be more than 50% of the total available score.

e.g.: P = Q/Qmax x 750 + y (where the maximum value of y would be 250)

OR P = y (where the maximum value of y could be 1000)

In all cases: P = Total score, Q = pilot score, Q max = best score for an element of the task, y = an absolute score

The winner of the class shall be the pilot gaining the highest total points in the class

The Paramotor team prize is computed from the sum of the scores of the top three pilots of each country in each task in each valid class which has minimum of 8 pilots.

The task score for which a pilot was disqualified shall not count for team scoring. Other valid tasks flown by this pilot are not affected (S10 4.34.12)

In the PF and PL classes, if less than 50% of pilots in class start a task then after all penalties have been applied each pilot score for the task will be reduced on a pro-rata basis according to the following formula:

Pilot final task score = Ps*(MIN(1,(Ts/Tc)*2))

Where

Ps = Pilot task score after all penalties Etc are applied.

Ts = Total started; Total number of pilots in class who started the task (ie properly, beyond 5 minute rule).

Tc = Total class; Total number of pilots in class.

ENTRY FORM EXAMPLE

ENTRY FORM FOR (Title of Championships, Dates, Location, Country)

Name of National Aero Club ....

Address ....

Tel .....fax .....

E-mail..... .....

We wish to enter the following competitors who qualify under the FAI Nationality or Residence Rules (GS 3.7):

Name	Age	Gender	Comp. class	P1 NAV ASST TL	Sporting Licence Nº	Pilot Licence Nº

Note : The maximum number of aircraft which may be entered is ……. with not more than ……. in any class.

Name of Team Leader .....

Names/number of Assistants if known .....

.....

.....

Names/number of accompanying technical officials if known .....

.....

.....

.....

ENTRY FEES

	Fee	Number	Total Entry fee
Pilot / Nav			
Assistant			
Team Leader			
Technical Official			

This amount is enclosed/will be paid by _____ *(date)* in the form of _____ *(currency)*

Note : The closing date for the receipt of entry fees is 28 days before the start of the event. Late entries may not be accepted.

We declare that the above information is true.

Signed : .....Position in NAC.....

Print Name ..... Date .....

INSURANCE:
Each competing aircraft shall be covered for public liability risk to the value of _____ *(value & currency)*. Proof of cover must be provided at Registration and before the aircraft is flown. Competitors are strongly advised to take out personal accident cover.

PUBLICITY:
A passport type photograph and a short biographical note for each pilot and the team leader should be provided either with this Entry Form or at latest at Registration.

Annex 4 to SECTION 10, Task Catalogue

TASK CATALOGUE for MICROLIGHT AND PARAMOTOR CHAMPIONSHIPS

AUTHORITY

This Task Catalogue is to be used in conjunction with the Local Regulations. The General Section and Section 10 of the FAI Sporting Code takes precedence over the Local Regulation and Task Catalogue wording if there is ambiguity.

CLARIFICATION

Classes AL1, AL2, WL1, WL2, GL1 and GL2 are "Microlights", classes PF1, PF2, PL1 and PL2 are “Paramotors”

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Key to symbols used in the task catalogue

Line drawn before takeoff

Line drawn after takeoff

Free flight

Direction of travel

Marker selected from list of Marker Symbols

Ground feature to be identified from photograph

Turnpoint

Turnpoint to be identified from photograph

Ground feature to be photographed or controlled by FR evidence.

Timing point or gate

SP Initial or Start point

SP Initial or Start point with time gate

FP Finish point

FP Finish point with time gate

Marker identity given before takeoff

Home airfield

Outlanding airstrSP

Direction of landing

Left hand circuit

Right hand circuit

600' Circuit height above ground in feet

Windsock

Landing direction indicator

Road or track

Marker Symbols

H
I
K
L
N
T
U
X
O
=
Π
Δ

Annex 4, Part 1. Applies to All classes

1.1 INTRODUCTION

This catalogue describes tasks which may be set in FAI World and Continental championships. It does not preclude new tasks provided they have been tried out satisfactorily in national competitions and are clearly described and accepted when the FAI Microlight Commission (CIMA) approves the Local regulations.

Good tasks make for good championships, but tasks also drive the design direction for the aircraft. For example, Microlights would soon lose their short field capability if no more precision landing tasks into a 100m deck were given.

Flight planning and navigation tasks develop good pilot skills but they, too, affect the characteristics of competition aircraft so a Director must try to set a reasonable balance between tasks where ultimately speed is the advantage and economy is the advantage. These tasks should be as long as possible, so that pilot skills are tested by having to fly over new and different country.

Competition Directors are cautioned against setting a few complicated tasks in favour of lots of simple ones. It is all too easy for a Championship to end with the minimum of tasks required (S10 4.3.3) and there is nothing more likely to upset pilots than if they think they have not flown enough in a championship to properly demonstrate their skills.

1.2 TASK TYPES

1.2.1 GENERAL

Tasks fall into Three Categories:

A Flight planning, navigation estimated time and speed. No fuel limitation.

B Fuel economy, speed range, duration. Fuel limited to maximum 15 kg for aircraft flown solo and 22 kg for aircraft flown with two people.

C Precision

The proportion of each task to be used is stated in S10, 4.29.3

Any task may be set more than once, either identically or with variations.

Distances should be as long as possible referring to the recommended still air range of the competing aircraft stated in S10 4.17.7.

In any task requiring pre-declaration of speed or elapsed time the Director may set up hidden gates through which the pilot would fly if on the correct flight path. Pilots failing to be checked through such gates or who are observed flying a devious path to adjust timing/speed errors may be penalised. No information will be given at briefing on the existence or whereabouts of hidden gates, or the method by which they are controlled.

The Director may set a time period for completion of a task in addition to the last landing time.

Where 2m Pylons are defined in tasks, at the discretion of the Competition Director these may be replaced by 12m (+- 1m) inflatable pylons.

1.3 EXAMPLE TASKS

The following tasks are examples of the tasks described above. Their purpose is to show the way in which real tasks have been designed using the generic principles outlined earlier. However, this is not an exhaustive set of tasks and others may be designed using these principles. Certain aspects of the scoring have been included in the task descriptions, in particular a schedule of penalties. However, the specific scoring for markers, turnpoints etc to be used in the competition will be briefed prior to the task being flown.

Annex 4, Part 2. Tasks for Microlights

2.A1 CURVE NAVIGATION WITH TIME ESTIMATION

Precisely fly the course defined by an arbitrary line drawn on the map, with time estimations and a time limit.

Description

Pilots will receive a course drawn on a map. There will also be a number of known time gates where pilots will estimate their crossing time, counted from the start point.

Before take-off, pilots will hand their declarations to a marshal.

They will take off from their designated deck and fly to the start point, where time will start. Then they will precisely fly the course trying to cross the time gates in order at their estimated times.

Navigation and timing end at the finish point.

There will be an undetermined number of hidden gates to validate the course. Gates must be crossed in order and proper direction. Crossing the same gate more than once in any direction invalidates the gate. Example: The sequence 1-2-4-3-5-6-5-7 will be evaluated as 1-2-4-6-7, a total of five correct gates.

Time will be measured at the known time gates and checked against pilot declarations. If a time gate is crossed more than once, time will be extracted from the first crossing.

There will be a maximum flight time – Tmax – between crossing the start and finish points. No pilot may declare an estimated time beyond this limit.

SP	→	HG	→	TG1	→	HG	→	...	→	TG2	→	HG	→	...	→	FP
T = 0	Nav	+1	Nav	T1	Nav	+1	Nav		Nav	T2	Nav	+1	Nav		Nav	T < Tmax

Scoring

Spatial precision

Nh = Number of hidden gates in the task
H = Number of hidden gates correctly crossed (crossed once, in order and proper direction)
Qh = 1000 x H / Nh

Time precision

Nt = Number of time gates.
Emax = Maximum error (in seconds) in each time gate (typically 180).
Et = Sum of absolute errors in time gates.
Maximum error of Emax seconds in each point.
Emax seconds error is applied if point not flown.
Qt = Emax * Nt – Et

Total: Q = Qh + Qt P = 1000 x Q / Qmax

Comments

An additional penalty may be established for an excessive delay to cross SP since take-off.

An additional penalty may be established for an excessive delay to cross FP since crossing SP.

The task can also be run without the time precision part (no known time gates). Then Qt is dropped from the scoring formula.

2.A2 PRECISION NAVIGATION

Fly a circuit at a constant speed in each straight leg, estimating arrival times to known turn points.

Description

A circuit will be defined by a start and finish points, with a number of intermediate turn points. All points will be known before take-off.

Before take-off, competitors will hand a declaration of their estimated times of arrival to every turn point in the circuit, including the finish point.

Competitors will take-off from their designated decks and fly to the START point where navigation and timing start. They will fly each leg at a constant speed that should be consistent with their declarations. The speed in each leg may be different, but it must be constant along the leg.

There will be hidden time gates along the corridors.

Navigation and timing end at the FINISH point. Then they will proceed to land at their designated decks.

START	→	AA	→	BB	→	CC	→	DD	→	FINISH
T = 0	Nav	Ta	Nav	Tb	Nav	Tc	Nav	Td	Nav	Te

Scoring

Each hidden gate crossed scores 180 points. A gate crossed twice or crossed in the opposite direction will be invalidated.

An estimated time for crossing each gate will be calculated by the organization. Crossing time will be checked against this estimation. Each second of error will score one negative point. If a gate is crossed twice, time will be extracted from the first crossing.

Spatial precision:

Emax = Maximum error (in seconds) in each time gate (typically 180).
Ng = Number of gates correctly crossed
Qp = Emax * Ng

Time precision:

Ei = Absolute error in seconds in gate i.
Maximum error is Emax. Time gates not crossed score Emax seconds error.
Qt = ∑ Ei (sum of errors in all time gates)

Total: Q = Qp + Qt P = 1000 * Q / Qmax

Penalties

An additional penalty may be established for a delayed crossing of SP from the take-off time.

2.A3 CONTRACT NAVIGATION WITH TIME CONTROLS

Fly a course between a combination of declared turn points, flying over some of them at a specified time.

Description

Pilots will receive a catalogue of turn points. Three of them, the start point SP, a middle point MP and the finish point FP, are mandatory and will be crossed at designated times.

Before take-off, pilots will declare the sequence of turn points they will fly.

They will take off and fly to the START point where navigation begins. Then they will fly the sequence of declared points in order, including the mandatory MIDDLE POINT and FINISH POINT. These two points will be flown a the specified time. Upon reaching the finish point, navigation ends.

Turn points may only be visited once.

Time starts counting at the start point (SP). Competitors will fly over the middle point (MP) exactly T seconds after SP and will fly over the finish point (FP) exactly 2T seconds after SP.

Pilot's declaration will include MP. Points declared to be flown after MP can't be flown before the established time for MP. Otherwise those points will be invalid.

SP	→	P1	→	...	→	MP	→	Pn	→	...	→	FP
Time = 0 s	Nav		Nav		Nav	Time = T s	Nav	Nav			Nav	Time = 2T s

Scoring

Turn-points

N = Number of turn-points declared and flown in order (different from SP, MP and FP).
Ep = Number of declared points that were not flown (or not in order), including SP, MP and FP.
V = N – Ep
Qp = 1000 * (V / Vmax)

Time estimation:

Emax = Maximum error (in seconds) in each time gate (typically 180).
Et = Sum of absolute errors in SP, MP and FP.
Maximum error of Emax seconds in each point.
Emax seconds error is applied if point not flown.
Qt = Emax * 3 – Et

Total: Q = Qp + Qt P = 1000 * Q / Qmax

Comments

An additional penalty may be established for a delayed crossing of SP from the take-off time.

2.A4 NAVIGATION OVER A KNOWN CIRCUIT

Follow a known circuit, finding markers or identifying ground features from photographs and locating their positions on a map or crossing hidden gates.

It may be required to distinguish between on-track and off-track markers and ground features.

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.

Summary

Competitors will 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.

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) (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%

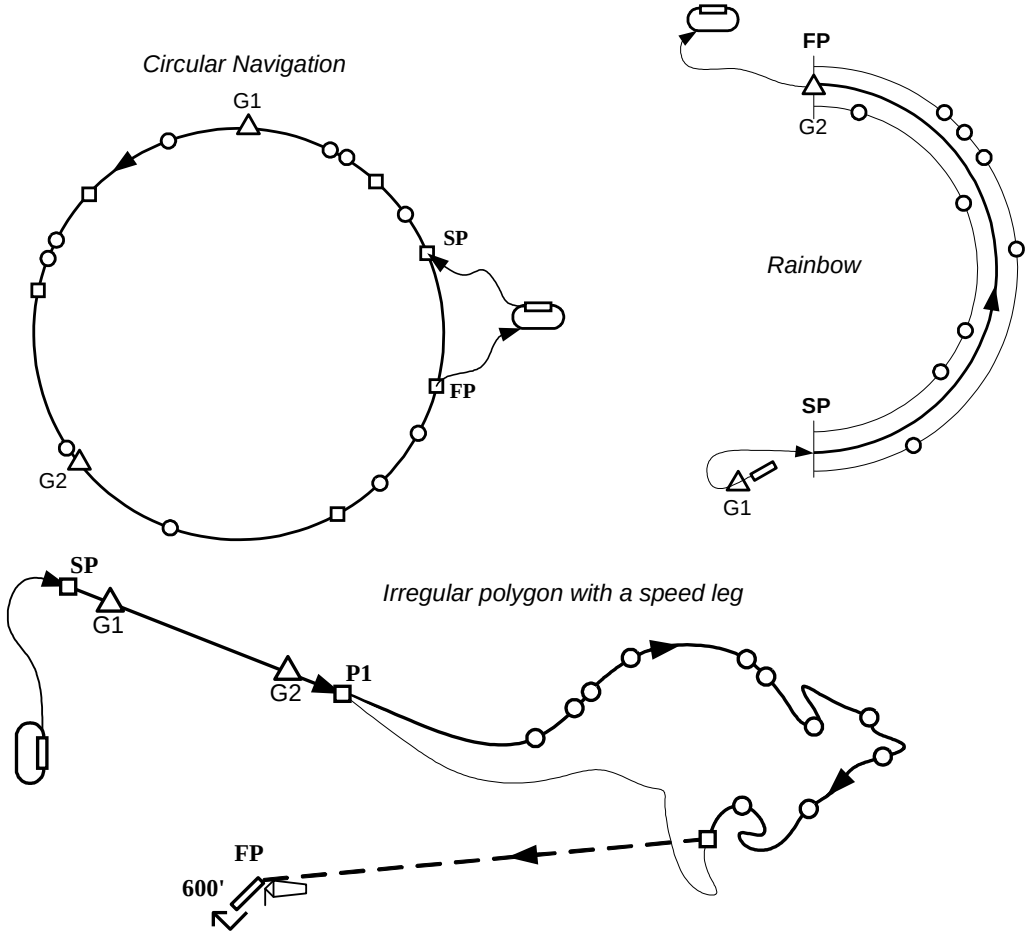
Landing deck penalty: 20%

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



2.A5 NAVIGATION WITH UNKNOWN LEGS

Follow a series of headings or known lines, finding markers and identifying ground features from photographs, and locating their positions on a map or crossing hidden gates.

It may be required to distinguish between on-track and off-track markers and ground features.

Certain of the 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.

Summary

Competitors will 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

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 = ∑ (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%.

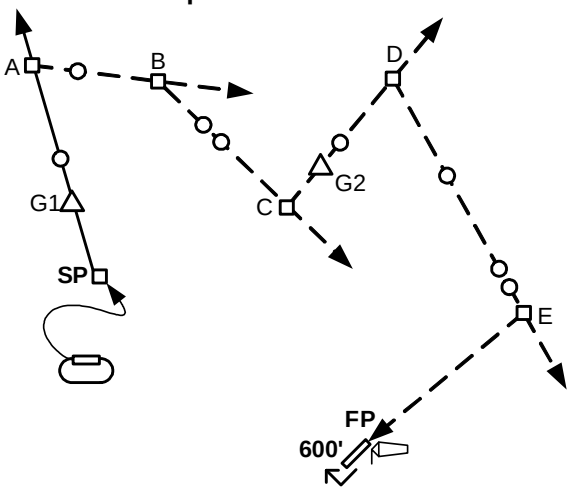
Backtracking against the task direction or crossing a hidden gate backwards: 100%

Breach of quarantine: 100%

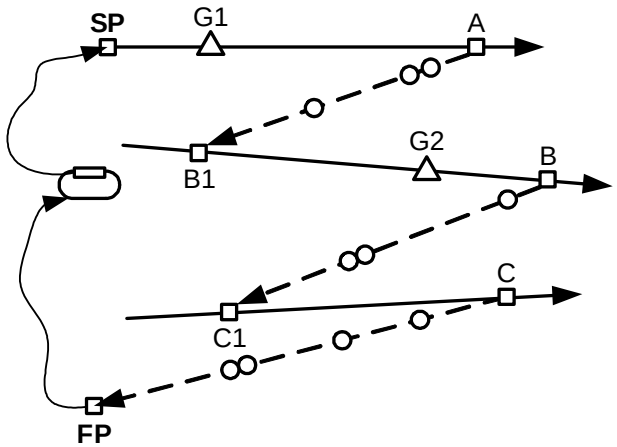
Crossing a hidden gate twice invalidates the gate.

A penalty will be specified for braking an envelope seal.

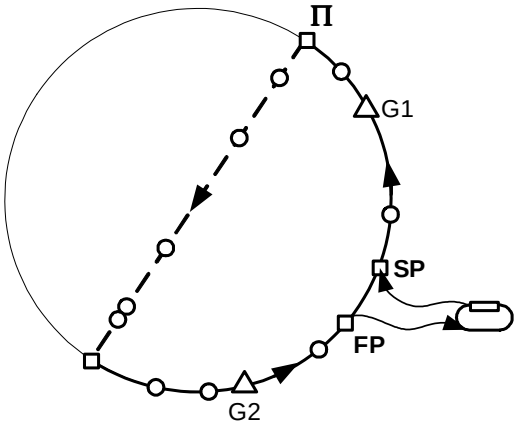
Examples



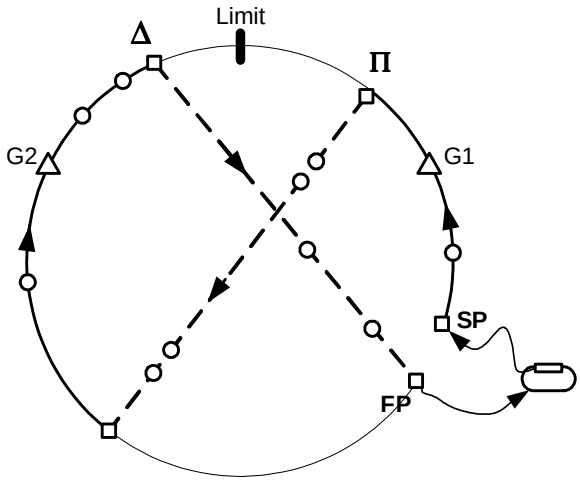
Sequential navigation



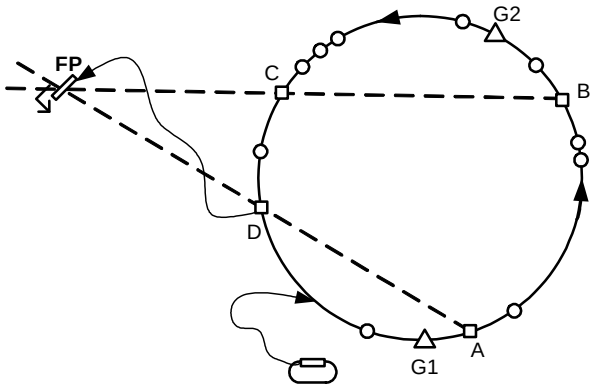
Linear navigation



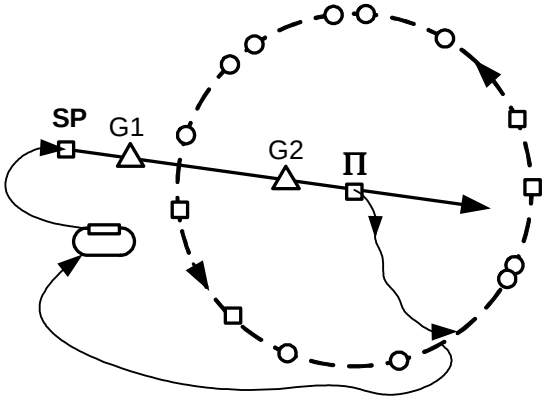
Circular navigation and diameter



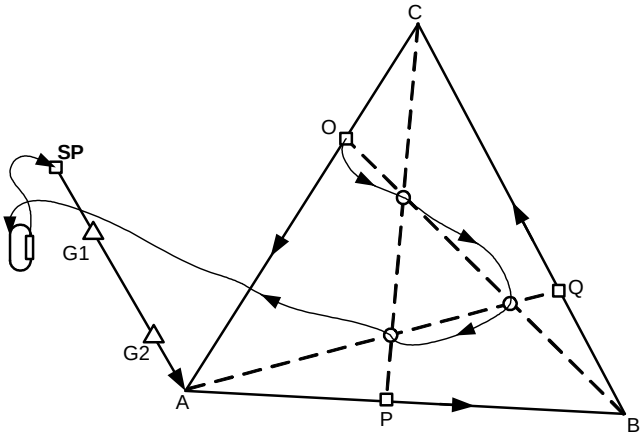
Circular navigation, diameter and reverse.



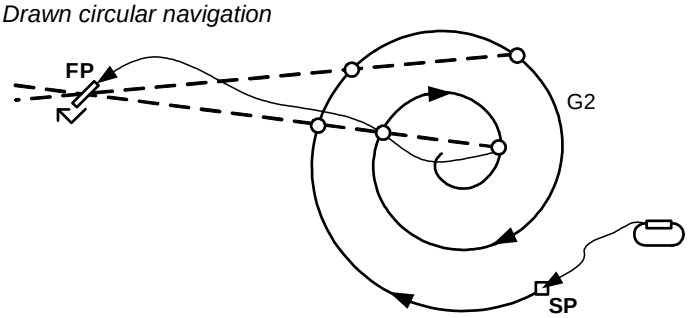
Circle and two lines



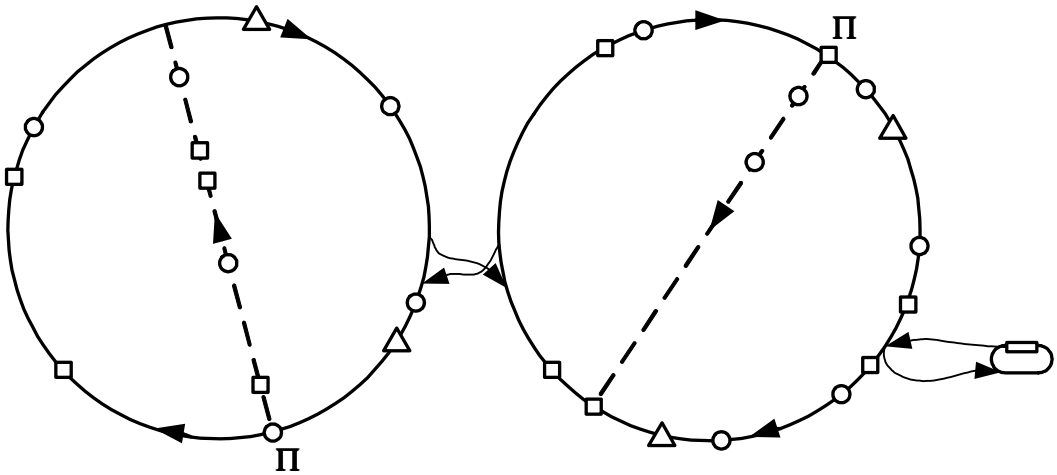
Drawn circular navigation



Triangle and three lines



Speed spiral and two lines

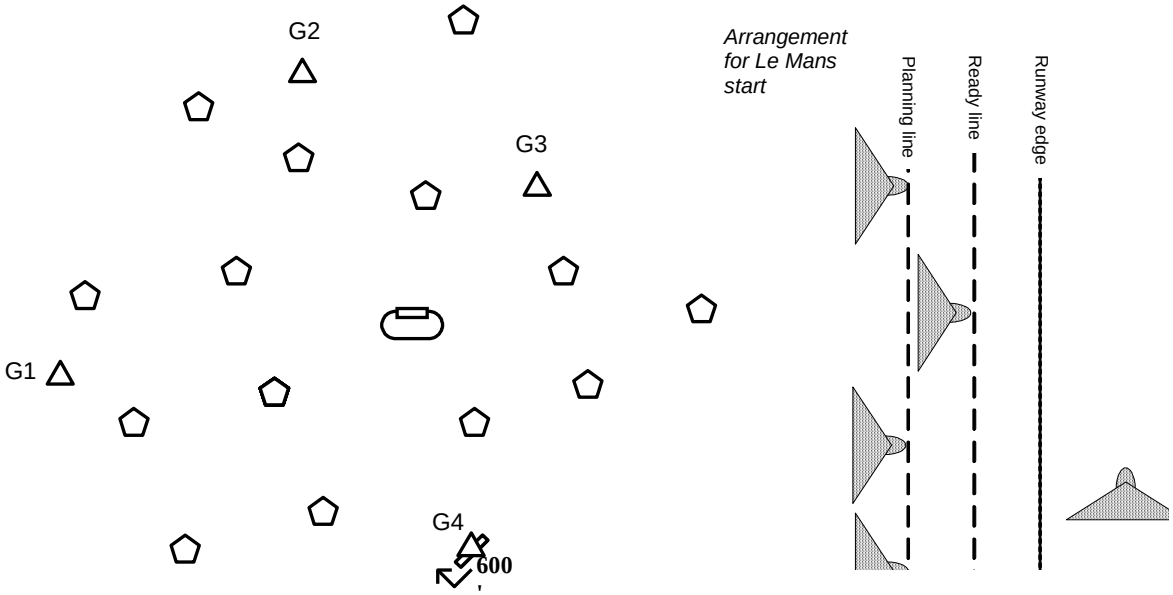


Double circular navigation

2.A6 TURNPOINT HUNT

Objectives

To fly to and identify from given photographs as many turnpoints as possible within a limited time and in the order predicted. 3 of the turnpoints will be compulsory timing gates which must be overflown within 10 seconds of a time predicted by the competitor. One of the gates may require a precision touchdown. A 'Le Mans' start may be required.



Summary

Competitors will be given:

- The location and score of all turnpoints and gates
- Photos of any ground features to be identified

Before takeoff the competitor must declare:

- The predicted time at which the gates will be overflown
- The predicted turnpoints and gates that will be visited and their sequence in the flight

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.

Le Mans Start

If a 'Le Mans' start is required for this task the aircraft will initially be lined up alongside the runway on the Planning line, about two aircraft lengths away. Each competitor's time will start when the turnpoint information is given. Once a competitor's planning is completed he will indicate this by starting his engine and pulling forward one aircraft length to the Ready line where he will wait until the Start Marshal flags him to enter the runway and line up. Once an aircraft is on the runway it must be allowed to take off before any other aircraft may enter the runway.

Safety

During the task competitors must be aware that their paths may cross those of other aircraft. They must maintain careful observation of the sky at all times and should avoid flying at predictable heights.

Scores

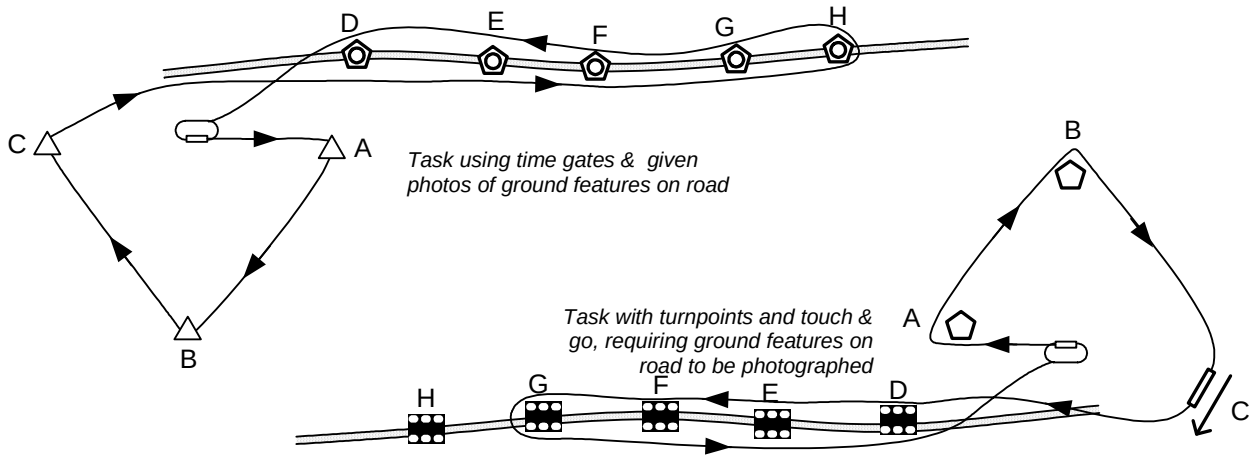
Typically each photo will score 100 points, each time gate 200 points and an additional score will be awarded if the full and correct turnpoint and gate sequence is achieved. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Breach of Quarantine: 100%
- Photo wrongly identified on the map: Penalty 50% of photo score
- Timing gate error >10 seconds from prediction: 10 points/second
- Time over maximum task duration: 10 points/second

2.B1 SPEED TRIANGLE OUT-AND-RETURN

Objectives

With limited fuel, to fly around a triangular circuit in the shortest possible time, then to return to the deck or pass through a gate, and finally, with the remaining fuel, to fly in a given direction as far as possible and return to the deck.



Summary

Competitors will be given:

- The location of the three turnpoints or time gates that form the triangle
- A line or linear ground feature such as a road, river, railway or power-lines to be followed
- The location of or photographs of known ground features
- A specified weight or volume of fuel

The task will normally start and finish with a Deck Takeoff and Deck Landing and, if a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.and any scoring

Scores

The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Backtracking against the task direction: 100%
- Failing to pass around the outside of the turnpoints or overfly gates:100%
- Returning with less than minimum specified fuel: 100%

The task score calculation will be:

$$\text{Pilot score} = \left(500 \times \frac{\text{tMin}}{\text{tp}}\right) + \left(500 \times \frac{\text{dp}}{\text{dMax}}\right) + \text{T}$$

Where:

tp = the pilot's time,

tMin = The best time (Part 1)

dp = the pilot's distance

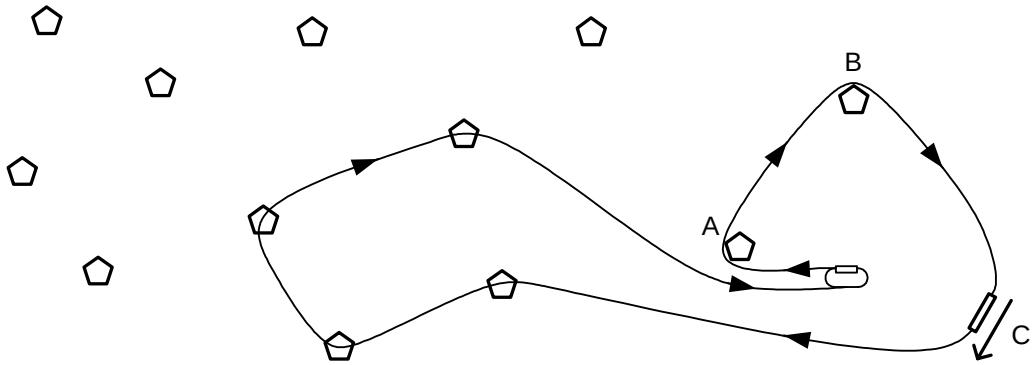
dMax = the greatest distance (Part 2)

T= touch & go score

2.B2 SPEED TRIANGLE & TURNPOINT HUNT

Objectives

With limited fuel, to fly around a triangular circuit in the shortest possible time, then to complete a precision touchdown, and finally, with the remaining fuel, to fly to as many turnpoints as possible and identify ground features from a given photograph before returning to the deck.



Summary

Competitors will be given:

- The location of the two turnpoints or time gates and the airstrip that form the triangle
- The location and photographs of known ground features
- A specified weight or volume of fuel

The task will normally start and finish with a Deck Takeoff and Deck Landing and, if a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.and any scoring

Scores

The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Backtracking against the task direction: 100%
- Failing to pass around the outside of the triangle turnpoints or overfly gates: 100%
- Photo wrongly identified on the map: Distance reduced as if turnpoint missed
- Returning with less than minimum specified fuel: 100%

The task score calculation will be:

Pilot score = $\left(500\times\frac{\text{tMin}}{\text{tp}}\right)+\left(500\times\frac{\text{dp}}{\text{dMax}}\right)+\text{T}$

Where:

tp = the pilot's time,

tMin = The best time (Part 1)

dp = the pilot's distance

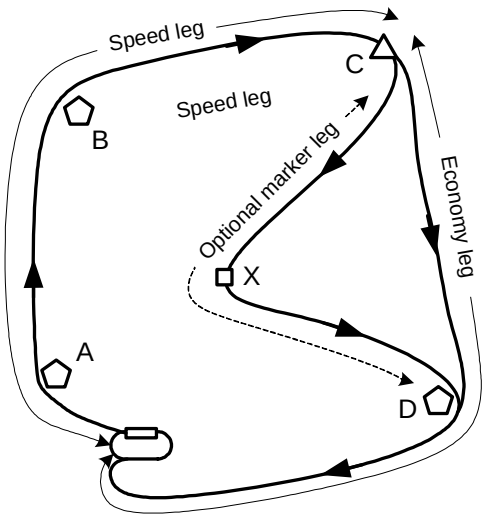
dMax = the greatest distance (Part 2)

T= touch & go score

2.B3 SPLIT SQUARE

Objectives

To fly around a square circuit, divided into a speed leg and an economy leg, using the minimum amount of fuel, the competitor deciding how much fuel to take. The competitor may choose to identify an optional scoring marker or ground feature in the centre of the square.



Summary

Competitors will be given:

- The location of the four turnpoints or time gates that form the square

- The location of optional scoring ground feature or marker
- The weight or volume of fuel specified by the competitor

The task will normally start and finish with a Deck Takeoff and Deck Landing and, if a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking and scoring.

Scores

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Failing to pass around the outside of the turnpoints or through gates: 100%
- Backtracking against the task direction: 100%
- Returning with less than minimum specified fuel: 100%

The task score calculation will be:

Pilot score = $\left(450\times \frac{\text{tMin}}{\text{tp}}\right)+\left(450\times\frac{\text{fMin}}{\text{fp}}\right)+\text{X}$

Where:

tp = the pilot's time,

tMin = the best time (Part 1)

fp = the pilot's fuel

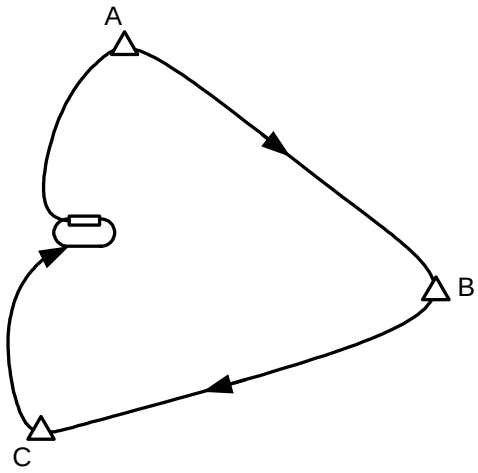
fMin = the least fuel (Part 2)

X = marker score of 100 points

2.B4 FUEL & SPEED TRIANGLE

Objectives

To fly around a triangular circuit at speed on limited fuel having accurately predicted the time to each corner of the triangle.



Summary

Competitors will be given:

- The location of the three time gates that form the triangle
- The weight or volume of fuel specified by the competitor

Before takeoff the competitor must:

- Declare the predicted time at which the gates will be overflown

The task will normally start and finish with a Deck Takeoff and Deck Landing. If a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.

Scores

Typically, each timing gate overflown within 10 seconds of the predicted time will score 100 points. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Failing to pass through the triangle timing gates: 100%
- Backtracking against the task direction: 100%
- Returning with less than minimum specified fuel: 100%
- Timing gate error >10 seconds from prediction: 5 points/second

The typical task score calculation will be:

Pilot score = $\left(350\times \frac{\text{tMin}}{\text{tp}}\right)+\left(350\times\frac{\text{fMin}}{\text{fp}}\right)+X_A+X_B+X_C$

Where:

tp = the pilot's time,

tMin = the shortest time achieved by a scoring competitor

fp = the pilot's fuel

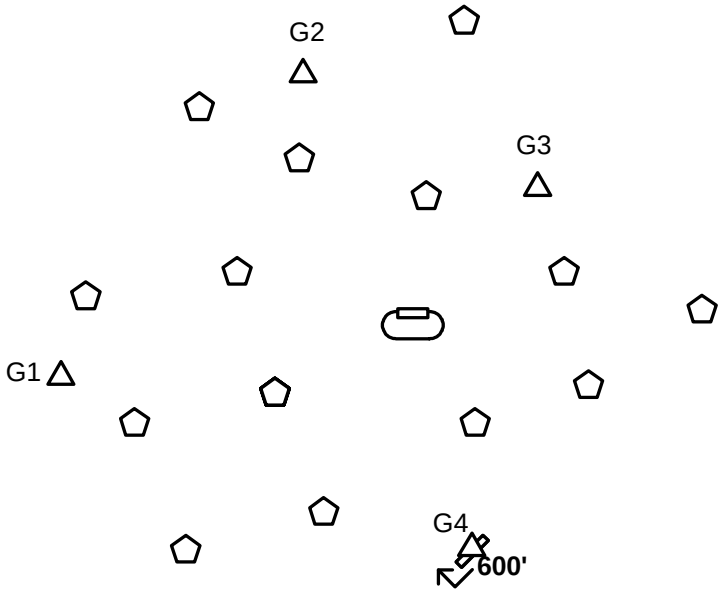
fMin = the least fuel used by a scoring competitor

X = gate score of 100 points

2.B5 LIMITED FUEL TURNPOINT HUNT

Objectives

To fly to and identify from given photographs as many turnpoints as possible within a limited time, carrying limited fuel. Three of the turnpoints will be compulsory timing gates which must be overflown within 10 seconds of a time predicted by the competitor. One of the gates may require a precision touchdown.



Summary

Competitors will be given:

- The location and score of all turnpoints and gates
- A specified weight or volume of fuel
- Photos of any ground features to be identified

Before takeoff the competitor must:

- Declare the predicted time at which the gates will be overflown

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 fuel checking and scoring.

Safety

During the task competitors must be aware that their paths may cross those of other aircraft. They must maintain careful observation of the sky at all times and should avoid flying at predictable heights.

Scores

Typically each photo will score 100 points and each time gate 200 points. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Breach of Quarantine: 100%
- Photo wrongly identified on the map: Penalty 50% of photo score
- Timing gate error >10 seconds from prediction: 10 points/second
- Time over maximum task duration: 10 points/second

2.B6 DURATION

Objectives

To fly for as long as possible on a limited amount of fuel.

Summary

Competitors will be given:

- A specified weight or volume of fuel

The task will normally start with a Deck Takeoff. Landing will normally be in an extended area, to be specified at the briefing. If a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.

Safety

Particularly if the task is to be flown to empty tanks, pilots must look out for other aircraft preparing to land engine off. A proper look-out must be kept at all times. An aircraft joining another in a thermal shall circle in the same direction as that established by the first regardless of height separation

Scores

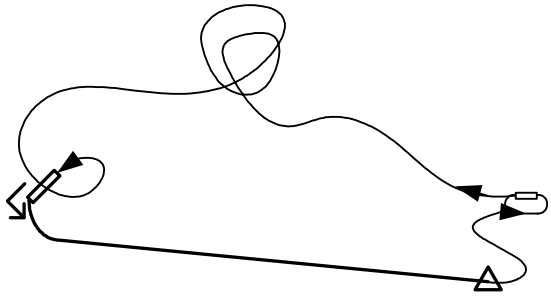
The following penalties will apply:

- Takeoff deck penalty: 20%
- Breach of Quarantine: 100%
- Flight in a prohibited area: 100%
- Landing outside the specified area but within the airfield boundary: To be briefed

2.B7 DURATION & SPEED

Objectives

Given a limited amount of fuel, competitors must stay airborne for as long as possible, leaving enough fuel for a precision touch-and-go followed by a fast leg flown at a speed to be predicted by the competitor



Summary

Competitors will be given:

- A specified weight or volume of fuel
- The location of the airstrip for the precision touch-and-go
- The location of the gate at the end of the speed leg

Before takeoff the competitor must:

- Declare the predicted time for the speed leg

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

Safety

Particularly if the task is to be flown to empty tanks, pilots must look out for other aircraft preparing to land engine off. A proper look-out must be kept at all times. An aircraft joining another in a thermal shall circle in the same direction as that established by the first regardless of height separation

Scores

The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Breach of Quarantine: 100%
- Flight in a prohibited area: 100%
- Predicted ground speed error: To be briefed

The typical task score calculation will be:

$$\text{Pilot score} = \left(400\times\frac{\text{tdp}}{\text{tdMax}}\right)+\left(400\times\frac{\text{tsMin}}{\text{tsp}}\right)+\left(200-\text{t}\Delta\text{p}\right)$$

Where:

tdp = the pilot's time achieved on the duration leg

tdMax = the longest time achieved on the duration leg by a scoring competitor

tsp = the pilot's time achieved on the speed leg

tsMin = the shortest time achieved on the speed leg by a scoring competitor

$t\Delta p$= the speed leg time error in excess of allowed 10 secs at 1 point/second (max 200)

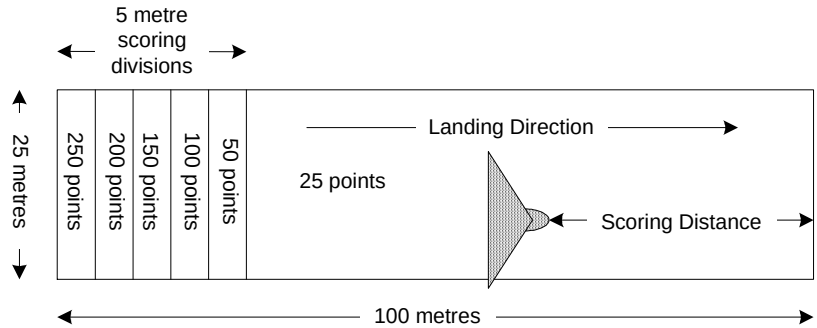
2.C1 SPOT LANDING

Objectives

The objective is for the aircraft to touch down within a marked deck, as close to the start of the deck as possible, coming to a halt in as short a distance as possible.

Summary

This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). The first 25-metre section of the deck is divided into five 5 metre strips which are scored from 250 to 50 points as shown. The remainder of the deck scores 25 points. In order to score the main wheels must touch down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck, as close to the start of the deck as possible.



Takeoff

The takeoff order will be specified at the task briefing. The pilot must position his aircraft to the satisfaction of the marshal and must not take off until instructed to do so by the marshal. The form of signal to be used by the marshal for this purpose will be specified at the briefing.

Climbing Circuit

The procedure for the climbing circuit will be specified at the task briefing.

Engine to Stop or Idle

The aircraft must approach the deck in the landing direction at a height of 1,000 ft. Before passing over the start of the deck the engine must be switched off or the throttle must be closed and the engine set to idle, as specified in the briefing. The aircraft must then fly over the full length of the deck before starting the descending circuit.

Descending Circuit

The procedure for the descending circuit will be specified at the briefing.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline either in the air or on the ground is permitted and the engine must remain at idle or may be switched off. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

The score will be the value of the strip in which both main wheels touch down with the ground (PS) plus the distance between the finish of the deck and the closest wheel, scored 1 point per whole metre (PD). Touching down on a dividing line scores the higher of the two strips.

The pilot will be scored zero if:

- The aircraft commences takeoff before instructed to do so by the marshal
- The engine is not stopped or the throttle is not closed before passing over the deck
- The aircraft does not pass over the entire length of the deck before turning to descend
- The engine does not remain at idle once final approach has started if engine idle permitted
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- Any part of the aircraft touches the ground before the deck.
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be (P_S + P_D) with a hypothetical maximum score of 350

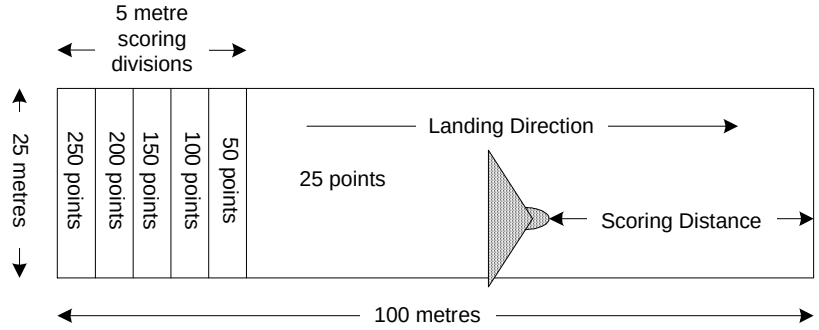
2.C2 SPOT LANDING - TIMED

Objectives

The objective is for the aircraft to touch down within a marked deck at a specific time, as close to the start of the deck as possible, coming to a halt in as short a distance as possible.

Summary

This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). The first 25-metre section of the deck is divided into five 5 metre strips which are scored from 250 to 50 points as shown. The remainder of the deck scores 25 points. In order to score the main wheels must touch down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck, as close to the start of the deck as possible. Additional points may be scored if the scoring touchdown takes place at or near an exact full minute as indicated by the competition clock, eg 11:31:00 hrs is a full minute, 11:31 17 hrs is not.



Takeoff

The takeoff order will be specified at the task briefing. The pilot must position his aircraft to the satisfaction of the marshal and must not take off until instructed to do so by the marshal. The form of signal to be used by the marshal for this purpose will be specified at the briefing.

Climbing Circuit

The procedure for the climbing circuit will be specified at the task briefing.

Engine to Stop or Idle

The aircraft must approach the deck in the landing direction at a height of 1,000 ft. Before passing over the start of the deck the engine must be switched off or the throttle must be closed and the engine set to idle, as specified in the briefing. The aircraft must then fly over the full length of the deck before starting the descending circuit.

Descending Circuit

The procedure for the descending circuit will be specified at the briefing.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline either in the air or on the ground is permitted. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

The score will be the value of the strip in which both main wheels touch down (PS) plus the distance between the finish of the deck and the closest wheel, scored 1 point per whole metre (PD). Touching down on a dividing line scores the higher of the two strips. If the aircraft touches down on a full minute, the time being taken from the official clock, ±5 seconds a further 100 points is scored (PT). This score will be reduced by 5 points for every second outside ±5 seconds from a full minute.

The pilot will be scored zero if:

- The aircraft commences takeoff before instructed to do so by the marshal
- The engine is not stopped or the throttle is not closed before passing over the deck
- The aircraft does not pass over the entire length of the deck before turning to descend
- The engine does not remain at idle once final approach has started if engine idle permitted
- Any part of the aircraft touches the ground before the deck.

- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be (PS+PD+PT) with a maximum score of 450

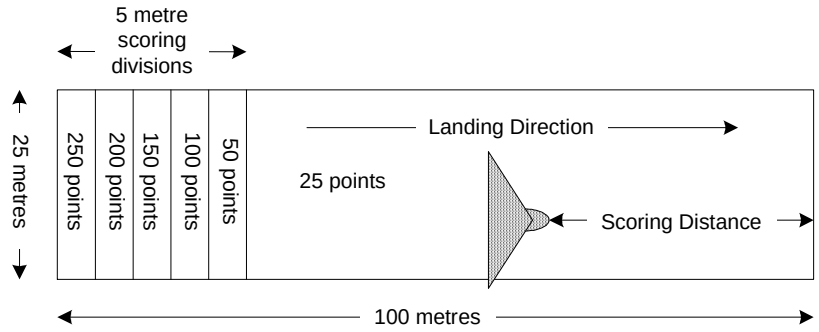
2.C3 POWERED PRECISION LANDING

Objectives

The objective is for the aircraft to touch down within a marked deck, as close to the start of the deck as possible, coming to a halt in as short a distance as possible.

Summary

This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). The first 25-metre section of the deck is divided into five 5 metre strips which are scored from 250 to 50 points as shown. The remainder of the deck scores 25 points. In order to score the main wheels must touch down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck, as close to the start of the deck as possible.



Joining

This task will follow the completion of a prior task in which no landing is required. Instructions for joining will be provided at the briefing or in the instructions for the prior task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline either in the air or on the ground is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

The score will be the value of the strip in which both main wheels touch down (PS) plus the distance between the finish of the deck and the closest wheel, scored 1 point per whole metre (PD). Touching down on a dividing line scores the higher of the two strips.

The pilot will be scored zero if:

- Any part of the aircraft touches the ground before the deck
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be (P_S + P_D) with a maximum hypothetical score of 350

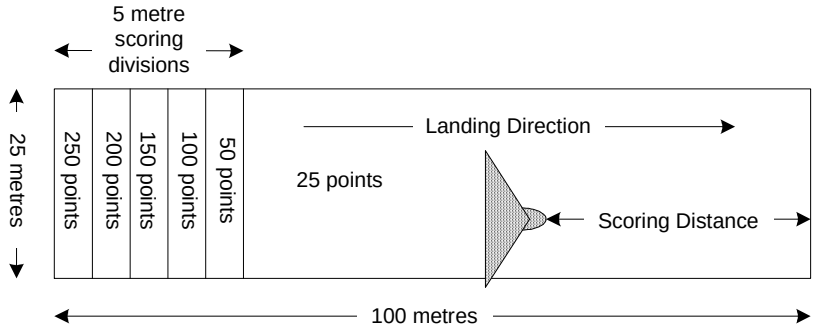
2.C4 POWERED PRECISION LANDING - TIMED

Objectives

The objective is for the aircraft to touch down within a marked deck at a specific time, as close to the start of the deck as possible, coming to a halt in as short a distance as possible.

Summary

This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). The first 25-metre section of the deck is divided into five 5 metre strips which are scored from 250 to 50 points as shown. The remainder of the deck scores 25 points. In order to score the main wheels must touch down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck, as close to the start of the deck as possible. . Additional points may be scored if the scoring touchdown takes place at or near an exact full minute as indicated by the competition clock, eg 11:31:00 hrs is a full minute, 11:31 17 hrs is not.



Joining

This task will follow the completion of a prior task in which no landing is required. Instructions for joining will be provided at the briefing or in the instructions for the prior task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline either in the air or on the ground is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

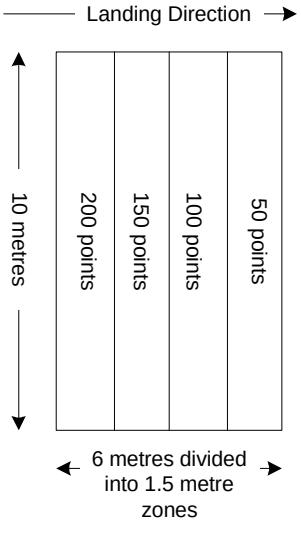
The score will be the value of the strip in which both main wheels touch down with the ground (PS) plus the distance between the finish of the deck and the closest wheel, scored 1 point per whole metre (PD). Touching down on a dividing line scores the higher of the two strips. If the aircraft touches down on a full minute, the time being taken from the official clock, ±5 seconds a further 100 points is scored (PT). This score will be reduced by 5 points for every second outside ±5 seconds from a full minute.

The pilot will be scored zero if:

- Any part of the aircraft touches the ground before the deck
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be (P_S+P_D+P_T) with a maximum hypothetical score of 450

2.C5 PRECISION TOUCHDOWN - TIMED



Objectives

The objective is for the aircraft to touch down within a marked deck at a specific time, as close to the start of the deck as possible.

Summary

The deck is 6 metres long, 10 metres wide and is marked in four 1.5 metre strips which are scored from 200 to 50 points as shown. In order to score the main wheels must touch down in a particular strip as close to the start of the deck as possible. The lines will be defined by raked wet sand to ensure accurate scoring. Additional points may be scored if the scoring touchdown takes place at or near an exact full minute as indicated by the competition clock, eg 11:31:00 hrs is a full minute, 11:31 17 hrs is not.

Joining

This task will form part of another task. Instructions for joining will be provided at the briefing or in the instructions for the main task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline is permitted. The pilot may choose whatever throttle setting he chooses or may switch off the engine unless otherwise instructed at the briefing. Once the touchdown is completed the pilot may immediately take off unless otherwise instructed at the task briefing.

Scoring

The score will be the value of the strip in which both main wheels touch down (PS). Touching down on a dividing line scores the higher of the two strips. If the aircraft touches down on a full minute, the time being taken from the official clock, ±5 seconds a further 50 points is scored (PT). This score will be reduced by 5 points for every second outside ±5 seconds from a full minute. The pilot will be scored zero if:

- Any part of the aircraft touches the ground before the deck
- The aircraft fails to touchdown within the limits of the deck
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be ($P_S + P_T$) with a maximum score of 250

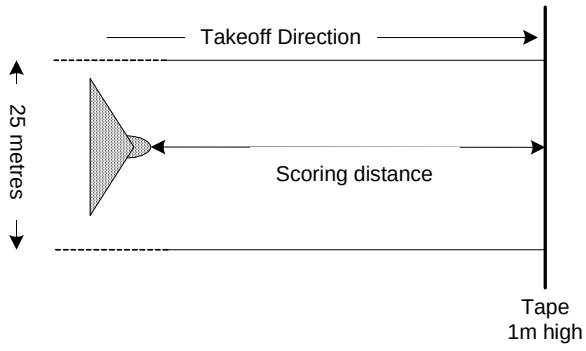
2.C6 SHORT TAKEOFF OVER AN OBSTACLE

Objectives

The objective is for the aircraft to take off over and clear an obstacle, starting the takeoff run as close to the obstacle as possible.

Summary

This task simulates a short field takeoff over a hedge, the hedge being represented by a tape stretched across the runway 1 metre above the ground. The pilot may position his aircraft on the runway as close as he wishes to the tape. This distance will be measured from the centre of the foremost wheel and rounded up to the nearest 0.1 metre. The aircraft must the take off over the tape without breaking it.



Takeoff

The takeoff order will be specified at the task briefing. The pilot may position his aircraft as close to the tape as he wishes and must not take off until instructed to do so by the marshal. The form of signal to be used by the marshal for this purpose will be specified at the briefing.

Procedure after Takeoff

The procedure to be flown after takeoff will be specified at the briefing.

Scoring

The competitor in each class that starts the takeoff run closest to the tape (DMIN) and clears the tape without breaking it will score 250 points. Other competitors will be awarded scores based on their distance from the tape at the start of their takeoff run (DP) relative to DMIN. The competitor will be scored zero if:

- The aircraft commences takeoff before stationary
- The aircraft commences takeoff before instructed to do so by the marshal
- The aircraft fails to fly over the tape
- Any part of the aircraft breaks the tape

Thus the score calculation will be ($250 \times D_{MIN} / D_P$) with a maximum score of 250

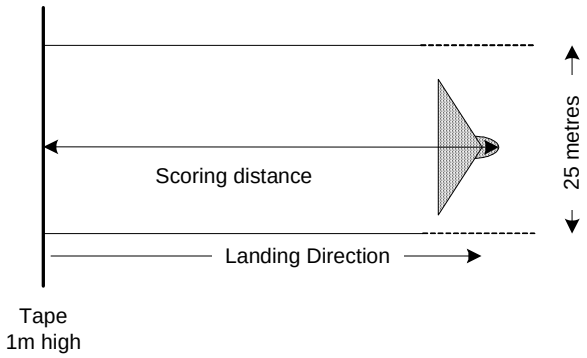
2.C7 SHORT LANDING OVER AN OBSTACLE

Objectives

The objective is for the aircraft to fly over and clear an obstacle, to land and come to a standstill as close to the obstacle as possible.

Summary

This task simulates a short field landing over a hedge, the hedge being represented by a tape stretched across the runway 1 metre above the ground. The pilot must land over the tape and stop. This distance will be measured from the centre of the foremost wheel and rounded up to the nearest 0.1 metre.



Joining

This task may form part of another task. Instructions for joining will be provided at the briefing or in the instructions for the main task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the centreline of the runway is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

The competitor in each class that comes to a standstill closest to the tape (DMIN) having cleared the tape without breaking it will score 250 points. Other competitors will be awarded scores based on their distance from the tape when they stop (DP) relative to DMIN. The competitor will be scored zero if:

- The aircraft fails to fly over the tape
- Any part of the aircraft touches the ground before the tape
- Any part of the aircraft breaks the tape
- The aircraft turns by more than 90 degrees from the runway centreline between starting the landing approach and coming to a standstill
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be (250 x D_{MIN} / D_P) with a maximum score of 250

2.C8 DECK TAKEOFF

Objectives

The objective is for the aircraft to take off from a deck 100 metres long by 25 metres wide.

Summary

This task proves the short takeoff capability that is fundamental to the performance characteristics of a Microlight by demonstrating that the aircraft can take off in 100 metres in still air at sea level. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). Where other local conditions, such as slope of the runway, will make a significant difference to takeoff runs the length of the deck may be adjusted accordingly.

Takeoff

This task will form the start of another task. The takeoff order will be specified at the main task briefing. The pilot must position his aircraft with its main wheels, or tail wheel in the case of a tail-dragger, immediately in front of the start line of the deck to the satisfaction of the marshal and must not take off until instructed to do so by the marshal. The form of signal to be used by the marshal for this purpose will be specified at the briefing.

Procedure after Takeoff

The procedure to be flown after takeoff will be specified in the main task at the briefing.

Scoring

There is no score for a deck takeoff but instead a 20% penalty will normally be applied to the main task if the aircraft fails to leave the ground before reaching the end of the deck. This penalty will normally apply if the aircraft:

- Commences takeoff before stationary
- Commences takeoff before instructed to do so by the marshal

- Main wheels fail to leave the ground before reaching the end of the deck.
- Touches the ground before climbing away.

2.C9 DECK LANDING

Objectives

The objective is for the aircraft to land in a deck 100 metres long by 25 metres wide.

Summary

This task proves the short landing capability that is fundamental to the performance characteristics of a Microlight by demonstrating that the aircraft can land in 100 metres in still air at sea level. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). Where other local conditions, such as slope of the runway, will make a significant difference to landing runs the length of the deck may be adjusted accordingly.

Joining

This task will form the end of a task. Instructions for joining will be provided at the briefing or in the instructions for the prior task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline either in the air or on the ground is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

There is no score for a deck landing but instead a 20% penalty will normally be applied to the main task if the aircraft fails to touch down and come to a halt within the deck. This penalty will normally apply if:

- Any part of the aircraft touches the ground before the deck.
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill.
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal.
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty.

Annex 4, Part 3. Tasks for Paramotors

3.A1 PURE NAVIGATION

Objective

To fly a course between as many turn points or markers as possible within the time window and return to the deck.

Scoring

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

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

OR

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

NBMax = the maximum distance flown in the task.

3.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 as possible within a given time, and to collect bonus points for landing at designated markers before returning to the deck.

Special rules

- The clock starts the moment the marshal makes the signal to take off.
- 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: 50 points

- 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 line or lands back on the deck.
- Any outside assistance: Score zero.

Scoring

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

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

Bto = Pilot's takeoff bonus points

Bld = Pilot's landing bonus points

BldMax = The maximum landing bonus points achieved.

3.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.

Special rules

- The value of T, in seconds, will be given at the briefing.

Scoring

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

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)

3.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.

Special rules

- The value of T, in seconds, 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

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

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.

3.A5 NAVIGATION OVER A KNOWN CIRCUIT

Follow a known circuit, finding markers or identifying ground features from photographs and locating their positions on a map or crossing hidden gates.

It may be required to distinguish between on-track and off-track markers and ground features.

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.

Summary

Competitors will 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.

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 = ∑ (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:

Takeoff deck penalty: 20%

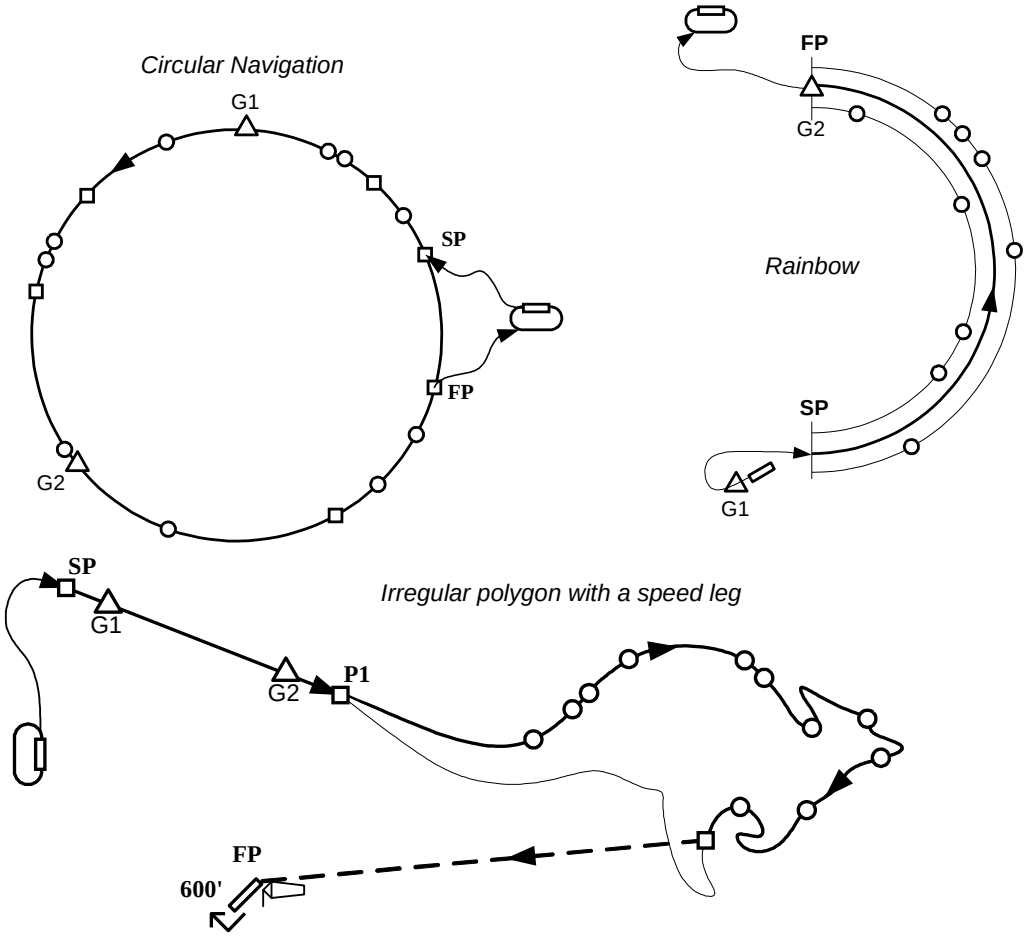
Landing deck penalty: 20%

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



3.A6 NAVIGATION WITH UNKNOWN LEGS

Follow a series of headings or known lines, finding markers and identifying ground features from photographs, and locating their positions on a map or crossing hidden gates.

It may be required to distinguish between on-track and off-track markers and ground features.

Certain of the 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.

Summary

Competitors will 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

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 = ∑ (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%.

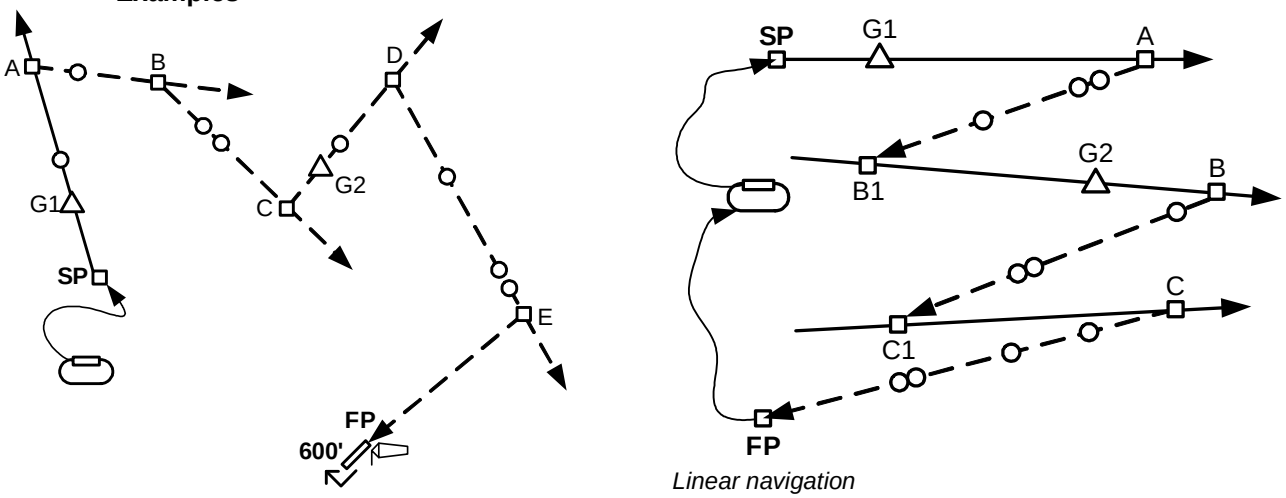
Backtracking against the task direction or crossing a hidden gate backwards: 100%

Breach of quarantine: 100%

Crossing a hidden gate twice invalidates the gate.

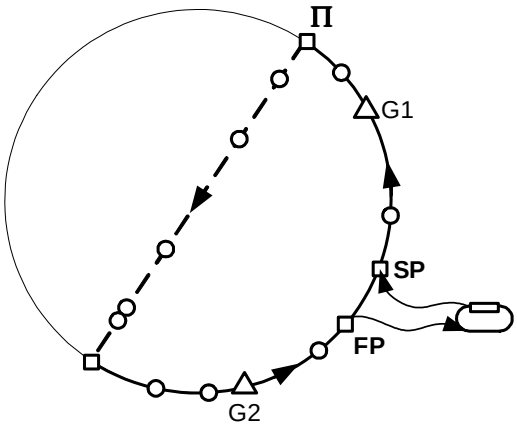
A penalty will be specified for braking an envelope seal.

Examples

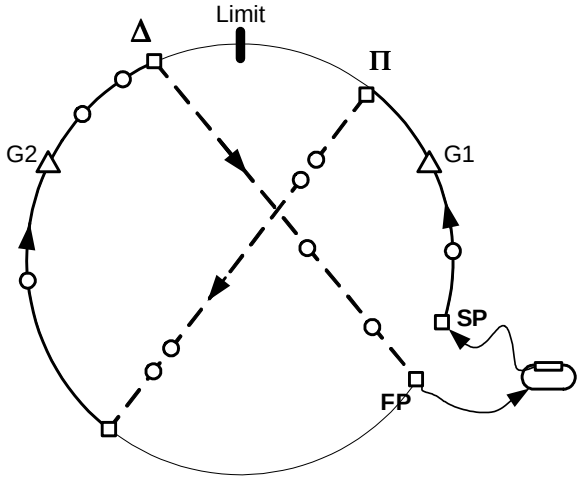


Linear navigation

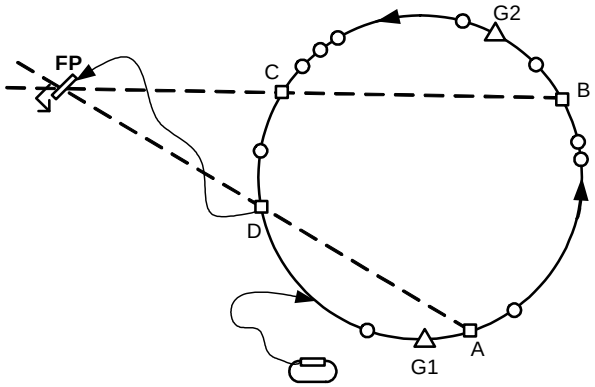
Sequential navigation



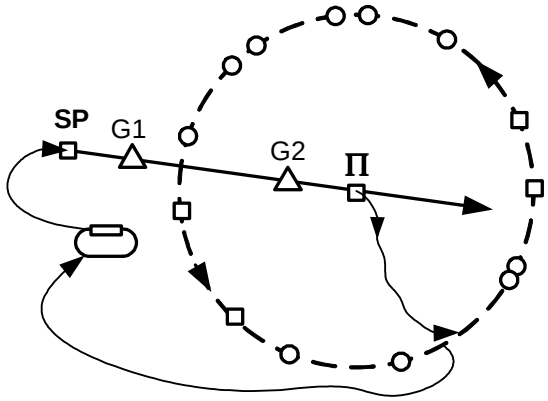
Circular navigation and diameter



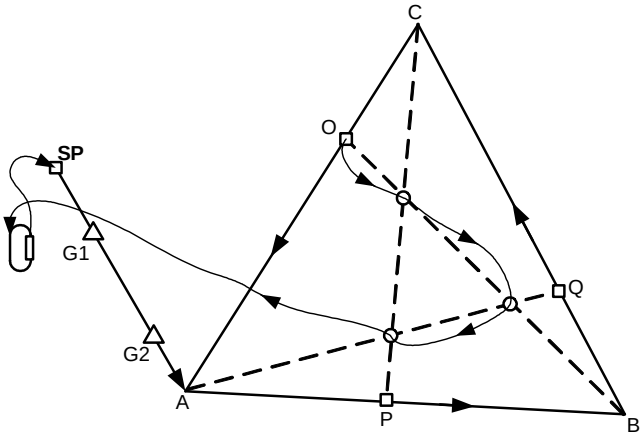
Circular navigation, diameter and reverse.



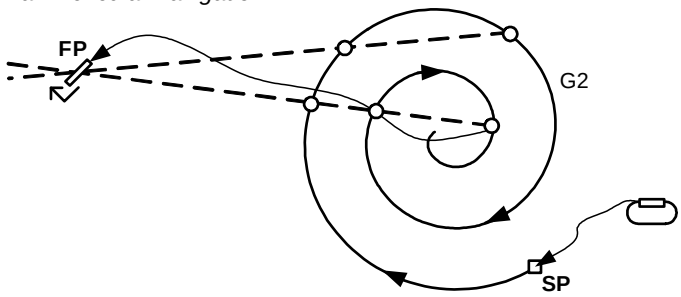
Circle and two lines



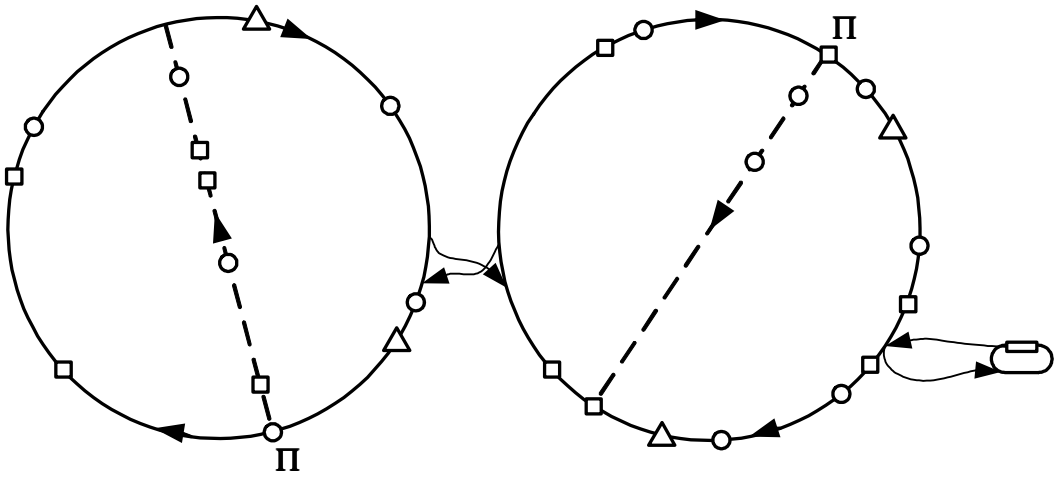
Drawn circular navigation



Triangle and three lines



Speed spiral and two lines



Double circular navigation

3.B1. PURE ECONOMY

Objective

Take-off with a measured quantity of fuel and stay airborne for as long as possible and return to the deck.

Special rules

- Free take-off within the time window.
- Departure from view of the marshals or egress from the permitted flight area will incur penalties.
- Land outside the airfield boundary: Score zero. Land inside the airfield boundary but outside the deck: 20% penalty.

Scoring

$$\text{Pilot score} = 1000 \times \frac{Tp}{Tmax}$$

Where:

Tp = The pilot's time,

Tmax = The longest time taken to complete the task

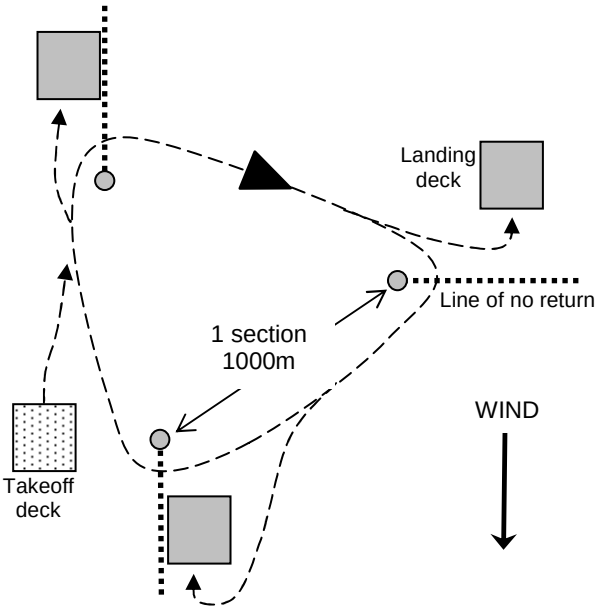
3.B2 ECONOMY & DISTANCE

Objective

To take off from the deck with a given quantity of fuel, fly as many sections as possible around a course of one or more sections and land in a landing deck.

Description

Each section must be approximately 1Km in length and must contain a landing deck. Lines of no return are arranged to prevent aircraft flying in the reverse direction to the general flow of traffic.



Special rules

- Pilots must not exceed 200ft height at any time.
- Exceeding the height limitations or failure of the complete aircraft to round a pylon does not score that section.
- Pilots should overtake on the outside of the course, they may overtake on the inside but will not score that section if the manoeuvre is considered to be overly aggressive.
- If the pilot or any part of his Paramotor touches the ground during the task and takes off again, score zero.
- Flying back across a 'line of no return' score zero.

- Failure to land in a landing deck: 20% penalty.

Scoring

$$\text{Pilot score} = 1000 \times \frac{Lp}{Lmax}$$

Where:

Lp = The number of whole sections completed by the pilot

Lmax = The maximum number of whole sections achieved in the task.

3.B3 ECONOMY & NAVIGATION

Objective

To take off with a given quantity of fuel and locate an unknown number of markers within defined sectors and return to the deck.

Description

Each sector will contain a given IP (initial point) and a FP (finishing point) which may be a turn point, marker or gate. The pilot flies a given track between the IP and FP. An unknown number of markers may be distributed along the track.

Special rules

- Outlanding: Score zero.

Scoring

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

Where:

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

3.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 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 will incur penalties.
- 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

$$\text{Pilot score} = \left(500 \times \frac{Tp}{Tmax}\right) + Bto + Bld$$

Where:

TP = The pilot's time

Tmax = The longest time taken to complete the task

Bto = Takeoff bonus points

Bld = Landing bonus points

3.B5 SPEED TRIANGLE AND OUT AND RETURN

Objective

With limited fuel, to fly around a circuit in the shortest possible time, return to the deck, and then, with the pilots remaining fuel fly in a given direction as far as possible and return to the deck.

Description

Fuel quantity allowed: (Suggested: 6 litres)

Part 1: Speed; The pilot take off time is noted. The pilot flies to one or more turnpoints and returns to the deck where he is timed.

Part 2: Distance; The pilot then flies in a given direction to a point of pilot choice and returns to the deck.

Special rules

- Land out before completing part 1: Score zero.
- Land out before completing part 2: Score zero for part 2.
- Failure to takeoff or land entirely in the deck: 20% penalty.

Scoring

Pilot score = $\left(500 \times \frac{tMin}{tp}\right) + \left(500 \times \frac{dp}{dMax}\right)$

Where:

tp = the pilot's time,

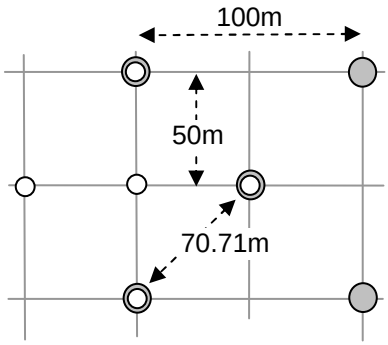
Tmin = The best time (Part 1)

dp = the pilot's distance

dMax = the greatest distance (Part 2)

A note about Paramotor precision tasks

Most precision tasks with slalom poles and/or pylons are designed to be run in either a 50m grid, a 70.71m grid or a 100m grid. It is then convenient for the organizer to set up the task area according to the grid in the drawing which gives the maximum flexibility in any wind direction with the minimum of hole-digging.



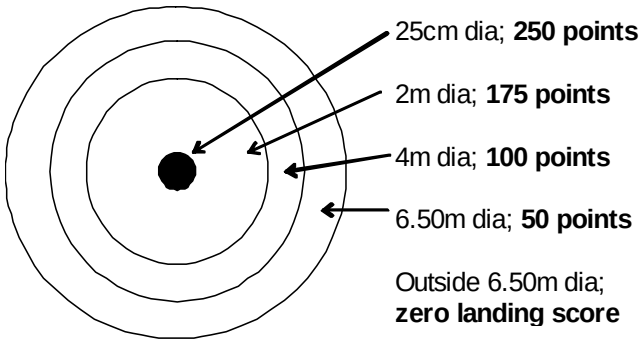
3.C1. PRECISION TAKE-OFF AND LANDING

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

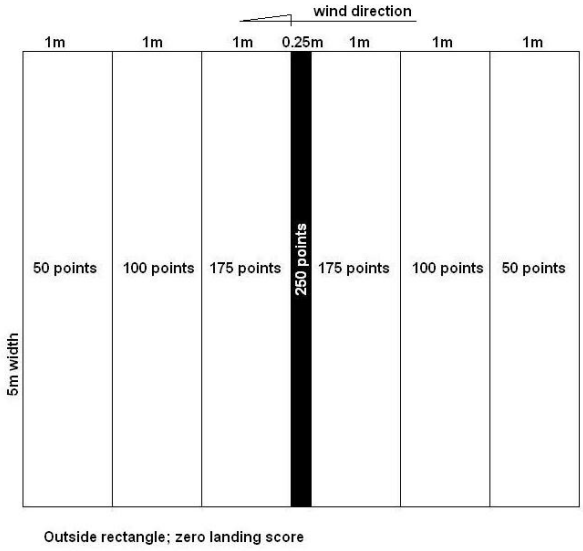
The pilot is permitted four takeoff attempts, climbs to 500ft overhead the target, cuts the engine before passing through a gate and tries to make a first touch as near as possible to the centre of a target consisting of:



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

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

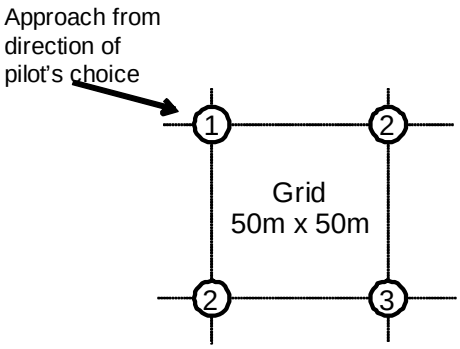
3.C2 THE FOUR STICKS

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.



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.
- 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.

3.C3 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 to the target achieved by any pilot.

Dp = x - the pilot's distance to the target (> x m = zero landing score).

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.

3.C4 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.

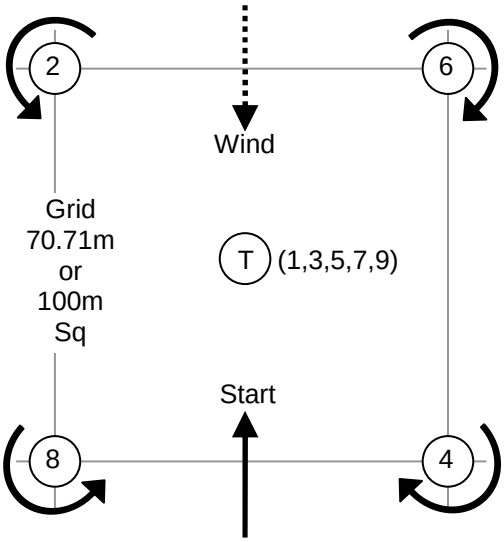
The distance measured is the maximum distance the pilot is away from the fence whilst touching the ground, thus if the pilot steps away from the fence during launch then this distance shall be included.

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

3.C5 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:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- 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 meterological conditions dictate.

Scoring

$$t_{pen} = t_{pil} + mv_{pen}$$

$$Q = \ln\left(\frac{3t_{best}}{t_{pen} - t_{best} + 3}\right)$$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets

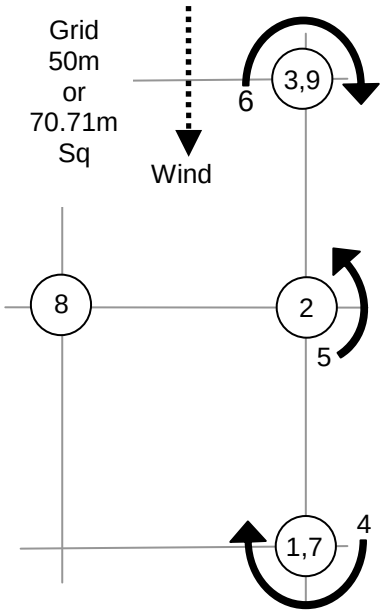
v_{pen} = the time penalty for each missed target (seconds)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

Note: Spreadsheet formulas:
t_{pen}: = t_pil + m * v_pen
Q: = LOG(3 * t_best / (t_pen – t_best + 3))
or
Q: = LOG(3) + LOG(t_best) – LOG(t_pen – t_best + 3)

3.C6 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:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- 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

$$t_{pen} = t_{pil} + mv_{pen}$$

$$Q = \ln\left(\frac{3t_{best}}{t_{pen} - t_{best} + 3}\right)$$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (seconds)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

Note: Spreadsheet formulas:
t_{pen}: = t_pil + m * v_pen
Q: = LOG(3 * t_best / (t_pen – t_best + 3))
or
Q: = LOG(3) + LOG(t_best) – LOG(t_pen – t_best + 3)

3.C7 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.

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:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- 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

$$t_{pen} = t_{pil} + mv_{pen}$$

$$Q = \ln\left(\frac{3t_{best}}{t_{pen} - t_{best} + 3}\right)$$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (seconds)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

Note: Spreadsheet formulas:
t_{pen}: = t_pil + m * v_pen
Q: = LOG(3 * t_best / (t_pen – t_best + 3))
or
Q: = LOG(3) + LOG(t_best) – LOG(t_pen – t_best + 3)

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.

3.C8 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 150m and 300m 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 a stick is:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- 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: Vp2 = null 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: Vp1 = zero and Ep = zero
- The pilot may have three attempts at kicking the fourth stick.

$$\text{Pilot score} = \left(0.25 \times Q \times \frac{\text{Vp}_1}{\text{Vmax}}\right) + \left(0.25 \times Q \times \frac{\text{Vmin}}{\text{Vp}_2}\right) + \left(0.5 \times Q \times \frac{\text{Ep}}{\text{EMax}}\right)$$

Where:

Q = Maximum task score between 500 and 1000 points, as briefed.

Vmax = The highest speed achieved in the fast course without penalties, 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 without penalties, in Km/H

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

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

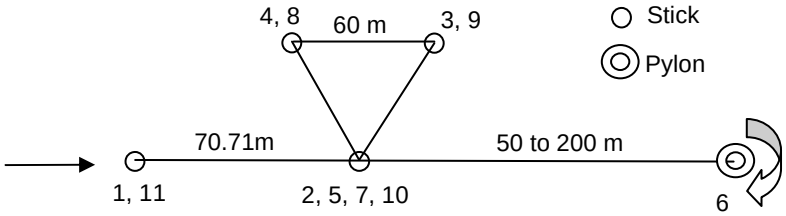
Emax = The maximum difference between scored slowest and fastest speeds after penalties, in Km/H

3.C9 ROUND THE TRIANGLE

Course description

The course consists of 4 sticks to be kicked and another stick or pylon as a turn point.

The distance from stick 1 to 2 is 70.71 m, the side of the equilaterlal triangle is 60 m, and the distance between stick 2 to turnpoint 6 is 50 to 200 m.



Flying the course

The pilot enters the course as indicated by the arrow and strikes the first target (strike 1). At this point the clock starts. The pilot flies kicking the sticks in the triangle (strikes 2, 3, 4 and 5), then ckockwise around pylon 6, returns to kick the sticks in the triangle (strikes 7, 8, 9 and 10) and then back to the initial stick (strike 11) The clock stops on strike 11.

Detail rules

- A valid strike on a target is:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- The pilot's body must be clearly seen to round pylon 6 clockwise.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.

Scoring

$$t_{pen} = t_{pil} + mv_{pen}$$

$$Q = \ln\left(\frac{3t_{best}}{t_{pen} - t_{best} + 3}\right)$$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (seconds)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

Note: Spreadsheet formulas:
t_{pen}: = t_pil + m * v_pen
Q: = LOG(3 * t_best / (t_pen – t_best + 3))
or
Q: = LOG(3) + LOG(t_best) – LOG(t_pen – t_best + 3)

Penalties.

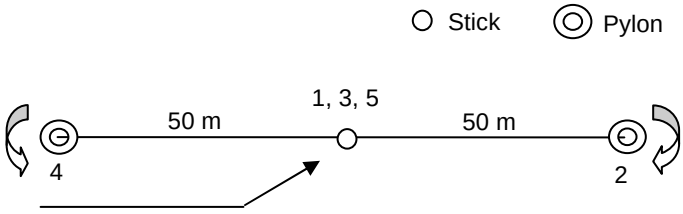
Touch the ground at any point between first and last strikes: Zero score.

Any part of the aircraft crosses the crowd line or dangerous flying: DSQ

3.C10 THE EIGHT

Course description

The courses consists of one central stick and another two sticks or pylons 50 m away on both sides.



Flying the course

The pilot enters the course as indicated by the arrow and kicks the stick (strike 1). At this point the clock starts. The pilot flies around the pylon ahead of him clockwise (strike 2), then kicks the stick (strike 3), then the other pylon counter clockwise (strike 4) and kicks the stick (strike 5). The course is repeated twice, the clock stops on strike 9.

The course may be flown in a mirror image pattern consistent with the description above.

If briefed, the course may be flown only once, accumulating a total of 5 possible targets.

Detail rules

- A valid strike on a target is:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- The pilot's body must be clearly seen to round the pylons clockwise or anticlockwise as indicated.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.

Scoring

$$t_{pen} = t_{pil} + mv_{pen}$$

$$Q = \ln\left(\frac{3t_{best}}{t_{pen} - t_{best} + 3}\right)$$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (seconds)

t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

Note: Spreadsheet formulas:
t_{pen}: = t_pil + m * v_pen
Q: = LOG(3 * t_best / (t_pen – t_best + 3))
or
Q: = LOG(3) + LOG(t_best) – LOG(t_pen – t_best + 3)

Penalties.

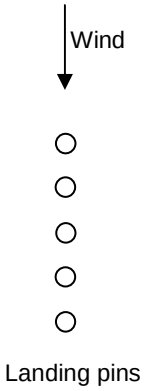
Touch the ground at any point between first and last strikes: Zero score.

Any part of the aircraft crosses the crowd line or dangerous flying: DSQ

3.C11 BOWLING LANDING

Objective

Land without engine, hitting as many pins as possible.



Landing pins

Description

5 pins are placed along a line into wind in the landing area at regular intervals between 1 and 2 m.

The pins are 50 cm high for PF classes and 100 cm high for PL classes and they are covered by dense foam. They can simply stand on the ground or can be attached to a spring system like that of the kicking sticks. A pin is said to be hit when it is clearly seen by a marshal or electronic sensor, or when the pin falls down.

Pilots will fly to 500ft and cut the engine before crossing a briefed gate.

They will fly a minimum of 60 seconds and will try to hit as many pins as possible before touching the ground. Each pin hit before touching the ground will score 50 points (maximum 250 points).

This task may be combined with a precision take-off.

Scoring

Pld = 50 points for each pin hit (maximum of 250 points)

Penalties

Not crossing the gate or crossing it engine on: zero landing score.

Flying less than 60 seconds with no engine: zero landing score.

Falling over during landing or two knees on the ground: zero landing score.

3.C12 PRECISION PARABALL

Objective

Deliver balls to a target (basket or hole) or as close to the target as possible, either by carrying or hitting with feet, as quickly as possible.

Description

The target is a hole or basket between 0.5-2m in diameter. The optimum is a hybrid of hole and basket; a hole with edges between 20-50cm above ground. Construction should be light for safety reasons but strong enough to hold the force of a flying ball and to keep balls inside.

Between 3-5 soft or half-empty balls of different sizes are placed downwind from the target on marked start positions. The distance between the balls and the target should be between 20–50m.

The pilot approaches a ball, collects it with his feet and carries it to the basket. Alternatively the pilot can kick the ball towards the target. This is repeated with the other balls until all the balls are in the basket or time is up.

A maximum task time limit is set. Timing starts with the touch of the first ball, the first attempt to touch a ball or when passing the first ball. Timing ends when the last ball enters the target (or when the maximum time limit is reached).

Scoring is based on the time taken from start of task until all balls are in the target. If the maximum time limit is reached, the number of balls in the target is counted and the distances of the remaining balls from the target are measured.

Special rules

There are no limitations to the number, angle, speed or height of approaches to the balls and the technique for hitting or carrying the balls.

Balls must stay in the target. Bouncing out from the target will give the result according to the distance from the target.

The pilot may contact, and move on, the ground but the wing may not touch the ground before time is up. The penalty if the wing touches the ground before the end of the time limit = score 0 for time.

The maximum time limit assigned to this task depends on the amount of balls, distances, the balls' properties, target size and weather conditions. For example, with 3 balls a suitable time limit is 3 or 4 minutes.

The maximum time limit is signalled by a marshal with an appropriate (red) flag and a whistle. Results are then measured from this state. If a pilot is carrying a ball when the time limit is reached, he is allowed up to 30 seconds extra time to deliver the ball to the target. This extra time finishes when the pilot next drops the ball, giving the pilot one chance to deliver the ball to the target.

Pilots must land in the landing deck immediately after the task is performed. Pilots must then remove all of their equipment from the task area immediately.

Details and changes to these rules will be briefed.

Scoring

Balls delivered into the basket will score maximum points
Balls inside the radius of 5 m from the edge of the basket: 50 % of ball score
Balls moved from its original location but outside of the 5 m radius: 20 % of ball score
Balls not moved from their original position: no points

N = balls carried into the basket minus penalties depending on the ball's position.
T = time in seconds from the start signal to the finishing the task

Pq = 700 * N / Nmax
Ps = 300 * (180 – T + Tmin)/180
P = Pq + Ps
Formula = x*330

3.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

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

Where:

nMin = The minimum noise in dBA achieved in the class

nP = The noise achieved by the pilot in dBA

3.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 (± 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

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:

nMin1 and nMin2 = The minimum noise in dBA achieved on each run in the class.

nP1 and nP2 = The noise achieved by the pilot in dBA on each run.